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FOOD MANUFACTURE

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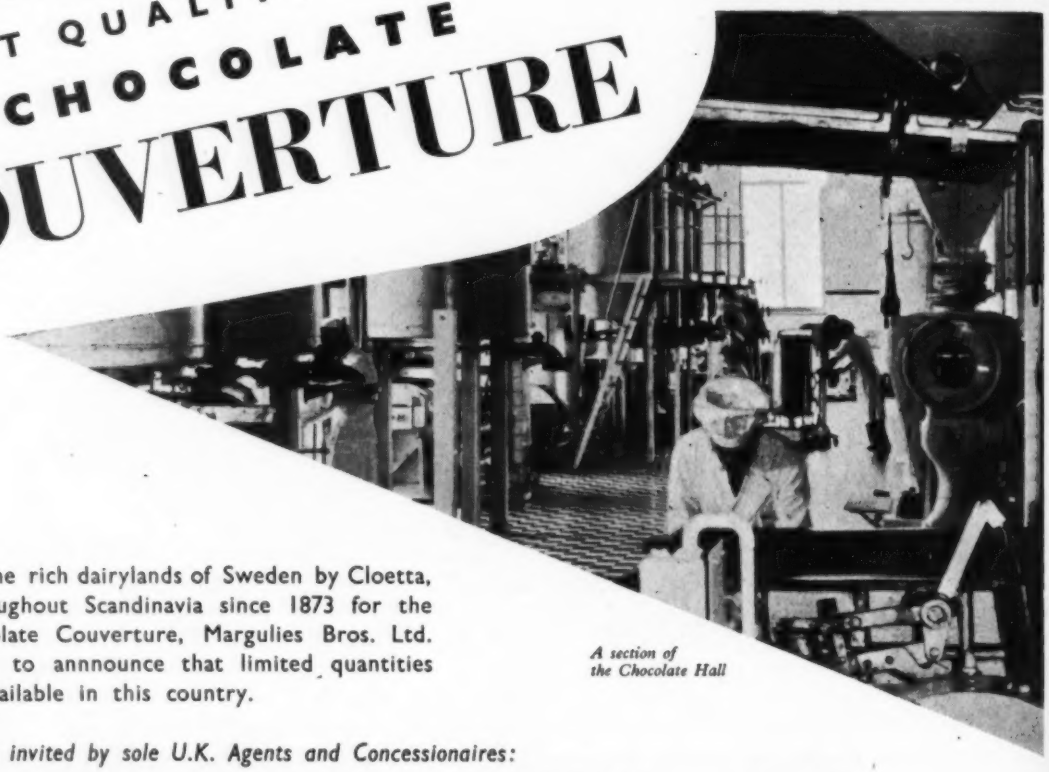

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FOOD MANUFACTURE

Vol. XXVI, No. 6 June 1, 1951

Nice Milky Coconuts

REPORTS of City Analysts are usually pretty staid documents, a perusal of which sometimes shakes our almost unswerving faith in our fellow-citizens. We read of the usual round of milk adulterations, of sausages whose meat content is even lower than that prescribed by law, of polonies containing 22 parts per million of sulphur dioxide where none should be, and so on.

One item of the annual report of Mr. H. H. Bagnall, Birmingham's City Analyst, took us back in memory to our childhood. In those days, we were uncommonly partial to coconuts, but part of the pleasure of eating them was spoilt because we were told that some nasty coconut sellers had a habit of boring out one of the "eyes" in the shell and introducing "dirty water" (presumably in the bacteriological sense) to make the nuts more "milky."

Truly there is nothing new under the sun. The way of the transgressor may be hard, but it is seldom original. It would not surprise us if the old, old "gold brick" and the "Spanish prisoner" swindles were even now tried on from time to time. Anyway, Mr. Bagnall tells of the doctoring of decomposing coconuts, condemned by the Food Inspection Department, by the simple expedient of boring a hole with brace and bit and inserting water, the hole being stopped up with a cork which was then cut off level with the shell. Apparently some modern improvement on the old method was intended, as the malefactor decorated the coconuts in black and white, thus giving what Mr. Bagnall drily describes as "a more festive appearance to a usually rather sober-looking article of commerce."

British Electronic Sterilisation

Since we published the note in January on American work on the electronic sterilisation of food, we have learned of the formation of a British company which proposes to investigate these claims and, if they prove well-founded, to develop suitable processes in association with American workers. The company is called Irradiation Research and Development, Ltd., and among its directors is Sir Robert Watson-Watt, F.R.S., the distinguished electronics engineer.

Dr. C. P. Stewart, managing director of the firm, informs us that, in his view, of all possible forms of sterilisation and preservation by irradiation, high-speed electrons afford at present the most hopeful line of approach, being free from the limitation of low penetration as in the case of ultra-violet irradiation, and being both efficient and freer from danger to operators than X-rays. The use of high-speed electrons demands high-voltage generators giving voltages of the order of five to ten million, and of these three types are available. It also requires special "cathode ray" tubes which have already been produced. In America, at least two teams are working on these lines and one has gone so far as to construct a machine which successfully sterilises such materials as pharmaceuticals, which are fed to it, ready packed for the market, on a conveyor belt.

Irradiation processes will not completely replace existing methods of preservation, because their inherent qualities impose limitations. For instance, they can be applied only to material which can be irradiated in relatively thin layers, or which needs only surface treatment, and to material which can be treated in reasonably large quantities. However, bearing in mind that the older and still generally used methods of preserving or sterilising food frequently fail to satisfy the condition of avoiding objectionable changes in the appearance and taste of food, it seems that electronic sterilisation fully justifies intensive investigation and development.

Low Sodium Diets

The commercial production of processed foods of known sodium content that are palatable, economical, and easily available to persons who need them is discussed by Franklin B. Bing in an article on "National Aspects of Sodium Diet" (*The Canner*, **112**, 10, 42).

From a survey made by the author in 1949 in collaboration with Freeman, Smith, and Pilcher, it was found that of forty-five hospitals with an average census of 14,511 patients, exactly 6 per cent. of these patients, or 870, were receiving low sodium diets. In general hospitals with 100 or more beds, the percentage was from 1·7 to 22·8.

Low sodium diets are now formulated on the basis of the total amount of sodium permitted each day. As a rule there are three levels of restriction. The

unrestricted diet usually provides from about 4 to 8 g. of sodium. The elimination of salt in the kitchen and at the table, and the avoidance of a relatively few highly salted foods, will reduce this intake to 1·5 to 3·0 g. daily, which represents the level of intake for a mildly restrictive diet. Moderate restriction of sodium to a level of from 0·5 to 1·5 g. daily requires the elimination from the diet of many processed foods which are flavoured with salt, such as common vegetables, and also the avoidance of certain foods which have a naturally high sodium content.

A severely restricted low sodium diet provides less than 0·5 g. of sodium daily. Diets may be prepared with less than 0·2 g. of sodium daily. Such low levels of sodium intake require rigid supervision and particular attention to the condition of the patient, for it must always be borne in mind that sodium is essential to life, and cases have been reported of circulatory collapse and uremia where sodium has been too rigidly excluded from the diet.

In view of Mr. Bing's opinion that, from a practical point of view, the food industry can contribute to this field of dietary therapy, it is interesting to note that, since 1949, many low sodium foods have become commercially available, and it is evident that the American food industry, particularly the canning industry, is performing a most useful service in this respect. If the sodium content were declared on the label, the physician and the dietitian would be able to make use of the information in the formulation of diets. Fortunately, reliable methods of determining the sodium content of foods are now available; the use of the flame photometer on a solution of the dry ashed sample is capable of giving accurate results.

The potential market for low sodium foods may be conservatively estimated to be about equal in magnitude to the market for canned, strained, and chopped foods for infants and small children.

Branch Factories in the Commonwealth

Some interesting indications of the mode of establishing a branch factory in the Commonwealth are given in an article by Dr. H. Catleen published in the April issue of our contemporary, *Manufacturing Chemist*.

The author points out that, of the countries prepared to accept new industries at present, the British Commonwealth countries are easily the most eager. There is little scope for newcomers in the U.S.A., while the South American republics, except Brazil and Colombia, are not organised to cope with the problems that would arise.

Of the British Commonwealth countries, Canada and Australia are both anxious to receive new industries and are prepared to offer the utmost help to manufacturers. These countries have special Government departments in State and Provincial capitals and also in London for the industrial development of their territories. Moreover, many towns set out to attract new industries by such inducements as the provision of modern factory buildings with all amenities. In some cases, factory space is offered rent free for five or ten years, plus tax reductions.

Dominion banks are also willing to assist with capital, either themselves or through associated financial houses on the spot, when once the proposed venture has been proved economically sound and the manufacturer has given sufficient particulars to prove his good faith and determination to pull his weight.

It takes about two months for a Dominion to produce all the necessary information. After this, it is up to the manufacturers to check everything on the spot, although they will, of course, have every assistance from Government and bank officials who will enable them to make personal contact with reliable business men in their trade.

Such services as these are offered free to manufacturers, whose first step is to compile and submit fullest details of their present business and proposed venture.

Pest Infestation Research

All food manufacturers and distributors who have to deal with bulk storage problems will find much of interest in the recently published annual report of the Pest Infestation Board for 1949. One of the most admirable features of this particular research is that it is not confined to British problems, as is fitting in the case of a country whose large population depends partly upon its own soil and partly upon the rest of the world for its diet.

One promising development is the use of DDT dust to control the blowfly in slaughterhouses. DDT dust and the rigorous control of refuse removal have eradicated blowfly larvae at one large slaughterhouse in London. By contrast, a single heap of refuse untreated with DDT and exposed to fly attack for only three days produced 26,000 blowflies; yet this heap of refuse was less than ¾ cwt. in weight.

The most striking feature of the report, however, is the description of the application of radio-isotope tracer methods to problems of insecticide and fumigant action. The Pest Infestation Board has set up a special department for this type of research. Effective though many of the modern chemical insecticides and fumigants are in controlling store pests, they introduce the danger of toxic or possibly toxic residues, and food that has been thoroughly "cleansed" in one way may become dangerously adulterated in another. By using radioactive

bromine, the insecticidal activity and trace movements of methyl bromide and of a brominated form of DDT have been studied with an accuracy and delicacy previously unattainable. A brief account of one of these investigations (with DDT and flour) has already been given in FOOD MANUFACTURE, 1950, **25**, 11, 443-444.

It is greatly to the credit of the Board, by no means a large or heavily staffed organisation, that it should have taken so early and impressive a lead in developing this method of research.

Irish Food Industry's Problems

Apart from the big difference in available supplies, it is evident that the food industry in Ireland is facing problems as big as those confronting its British counterpart.

The difficulties are being caused mainly by the very necessary attempts of the Irish Government to control to some extent the cost of living in the Republic by enforcing price fixing and price freezing Orders, and also by reducing subsidies and maintaining rationing.

Meat canners have been particularly affected; since 1947, when meat was controlled at retail level only, cattle prices have soared above 88s. 10d. per cwt., which even then did not provide for any great margin of profit. Some canners have had to cut production because the high prices have made it difficult for them to pay the wages of the staffs in the meat departments, let alone cover packaging costs and meet other overheads, while others are contemplating the discontinuance of meat packing altogether in favour of more profitable lines.

Those food manufacturers who are dependent on imports are severely handicapped by the Prices Freeze Order when they wish to buy some scarce commodity at the time of harvesting or production, for although the Prices Advisory Body, responsible for the Order, might be prepared to grant an increase based on the particular circumstances, the delay in getting sanction often causes manufacturers to lose the offer of the commodity.

In March, a chocolate, confectionery, and jam manufacturing firm reported that its profits for the year were £10,000 less than for the previous period, the chairman stating that half that amount was represented by the increased price of sugar which was agreed by the Government. Up to that date, they had not been allowed to increase their prices, even though their products contained an average of at least two-thirds sugar.

The profits of the Irish food industry have been controlled for twelve years, and manufacturers have kept within the margin agreed with the Minister for Industry and Commerce, but they are not happy about the Prices Freeze Order. They would prefer some control which would give some freedom of action to managements.

The Advisory Body, which must sanction any increase in price, has not the complete confidence of the industry; manufacturers are reluctant to give private and confidential information to the Body, which, as it is now constituted, may leave office at any time, although none ever had any objection to giving fullest details to the Department of Industry and Commerce.

The cumulative effect of the multiplicity of regulations affecting the Irish food industry is not likely, as some have pessimistically predicted, to end in the disintegration of its economic structure, but it may explain why some food processing firms went into liquidation in the first four months of 1951.

Renewed hope has been given to Irish food manufacturers by the success achieved by one large company in having biscuits removed from the Prices and Charges (Standstill) Order, 1951, following discussions with the Advisory Body. A move welcomed by meat manufacturers is the Order removing sausages and sausage meat, black and white puddings, and sausage casings and gut from the schedule to the same Order.

Problems in Fowl Pest Control

The Director of the Ministry of Agriculture's Veterinary Laboratory at Weybridge, Mr. Thomas Dalling, recently gave an excellent summary of the present situation with regard to Newcastle disease, or what is more popularly known as fowl pest (*Journal of the Royal Agricultural Society*, 1950, published 1951). Two major points are stressed: firstly, that it is a new infectious disease threatening to establish a foothold in Great Britain; and secondly, that it is introduced mainly through the importation of fowl carcasses and other poultry from countries where the disease is already established.

Two methods of fighting this virus disease invasion are available. One is the vaccination of chicks at about six weeks of age. In other countries where vaccination has been practised, losses from the disease have been virtually eliminated. The other method is the one at present adopted in Britain—the slaughter of infected fowls, the control of markets and poultry movements, and the zoning of imported carcasses so that there is little risk of contact between the dead and imported fowls and our own live poultry. Cumbersome though this latter policy seems, it has already done much to isolate the outbreaks of fowl pest and to prevent a more serious epidemic.

It may well seem that the more direct policy of vaccination would be less costly and more effective. Various vaccines are successfully used in other countries; the practice is not new, and even in

Britain research work has been undertaken on vaccine development for more than a decade.

Unfortunately, vaccination is a double-edged weapon. It may successfully control a virus disease and eliminate the risk of epidemic losses, but it inevitably encourages the continued presence of the disease in endemic form. Until it is established beyond doubt that the disease of fowl pest cannot be totally eradicated, the adoption of poultry vaccination as a national measure should not be considered. The harder way offers the hope, in the end, of complete victory.

Nevertheless, it is difficult to see how we shall avoid passing through a period of considerable shortage of poultry. Countries using the vaccine method must largely produce infected fowls; so long as we import their carcasses there is a high risk that our own non-immunised poultry will become seriously infected. At the same time, the slaughter of our affected fowls and the restrictions on their market movements place yet another barrier in the way of the expansion of home production.

We may reach a situation when carcasses cannot be imported and when our own poultry industry is unable to provide anything like an adequate supply of dead fowls. While the egg ration could be maintained by importation, the fowl as a source of meat would become appallingly scarce.

Chemicals plus Ice

In our issue of February, 1951, British and Canadian work on nitrite addition to the ice used for fish preservation was discussed. A new American development along similar lines has now been announced. A chemical supplement for ice used in chill-preservation is based upon fumaric acid and sodium benzoate, and is said to be composed of equal parts of these two substances. Widespread commercial distribution is already in progress. The preservative, a powder, is recommended for use in the ice on board ship, in cooking water for crabs or shrimps, and as a dip for vegetables or fruit. With ice, one part in 2,000 is used; as a dip solution, twice this concentration is recommended.

Early tests so far reported indicate that the fumaric-benzoate mixture lengthens the period of ice preservation considerably. Fish held ten days between the catch and port have been graded No. 1 standard when the preservative has been used, although generally this period of ice stowage leads to a second standard grading. Halibut were still graded No. 1 after sixteen days, although fish held for only six days on the same boat but without the additional preservative were graded to second standard. Highly perishable marine food, such as crabs and crab meat, has been kept in first class condition three times as long as is normally possible.

This is not, however, the first American product of this nature. Another supplement for ice already being sold in fishing industry areas of the United States is based upon sodium benzoate, one of the chloramines, and salt. One of the practical problems encountered in developing these preservatives has been the physical effect of certain ingredients upon the ice itself. Crushed ice has solidified again after the addition of the chemicals, presumably through surface melting followed by re-freezing. This has made it difficult to pack the stowage space properly with ice, re-crushing being needed if the gutted cavities of fish or empty space in crates were to be ice-filled. It is claimed that the benzoate-fumaric acid mixture is free from this disadvantage.

A Good Cup of Coffee

According to the records, coffee drinking in England was started by Pasqua Rosee, a Ragusan youth, servant of a Turkish merchant, who in 1652 set up the first coffee house in St. Michael's Alley in Cornhill, although a prior claim has been made for Jacobs, who started a similar establishment in Oxford a year or two earlier.

Rosee was a good publicity man, as his handbill, "The Vertue of the Coffee Drink," testifies. It tells how "in addition to curing dropsy, gout, scurvy, it is a most excellent remedy against the spleen, hypochondriac winds, and the like. And as for suppressing fumes exceedingly it cannot be beaten as it is good against headache and will very much stop any defluxion of rheums what distil from the head upon the stomach."

The new beverage had its opponents as was evidenced by the publication of sarcastic verses entitled "A Broadside against Coffee."

In spite of opposition, coffee became a favourite drink, and the shops where it was sold were places of general resort for the poets and wits of the day.

Three hundred years is a long time—long enough to learn the art of making good coffee. That it has not been learnt is evidenced by the taste of the woeful brews often offered us in the name of the infusion.

All this is to be changed, however, judging from the literature emanating from the Coffee Information Bureau, which has set up a judging panel containing some eminent gastronomic names.

Those restaurants, cafés, and canteens in London, sponsored by the Festival of Britain, whose coffee is of the standard laid down by the Panel, will be permitted to exhibit a "Seal of Quality" in the shape of a handsome certificate.

We look forward to tasting "certified coffee," and hope that the standards will be generally adopted, even after our visitors from overseas are no longer with us, when the fear of criticism from the *cognoscenti* will be allayed.

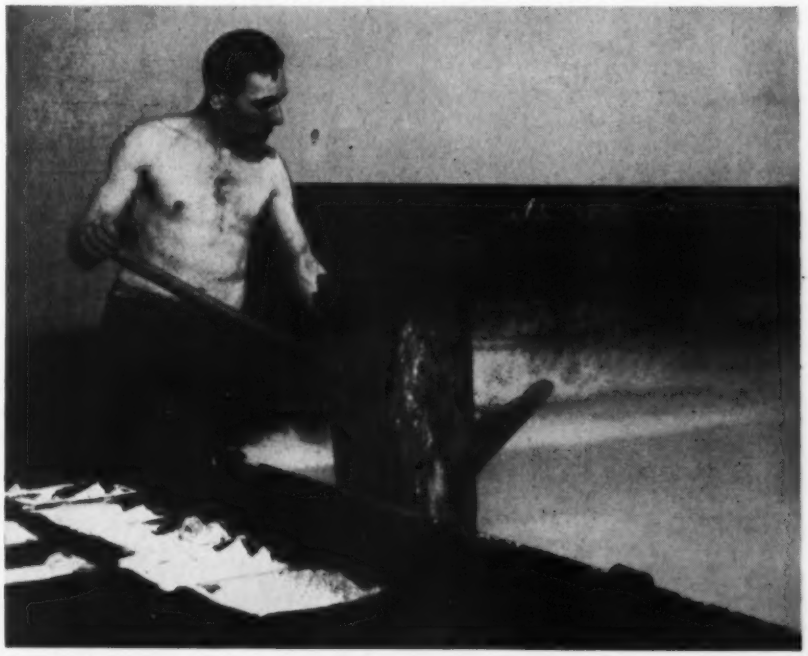
The Salt Pans of Cheshire

The principal area in Great Britain in which rock salt is found is Mid-Cheshire, although there are other small deposits in Stafford, Middlesbrough, and Droitwich. The salt pans of Cheshire have supplied Britain for several generations, and it is said that at the time of the invasion of England by the Romans, the people of Northwich were found to be engaged in making salt from salt springs. Today Cheshire is still the centre of the salt industry, and at Northwich is situated one of the most up-to-date plants, founded on the experience of four generations of salt manufacturers who designed and built it.

THE factory of The New Cheshire Salt Works, Ltd., stands in some eleven acres of land. Established in 1891 under the style of The New Cheshire Salt Company, the works were acquired in 1922 by the late Mr. Alfred Stubbs, who was the then managing director. Since that date the history of the concern has been one of steady and continuous development, the present weekly output approaching 1,000 tons of all grades.

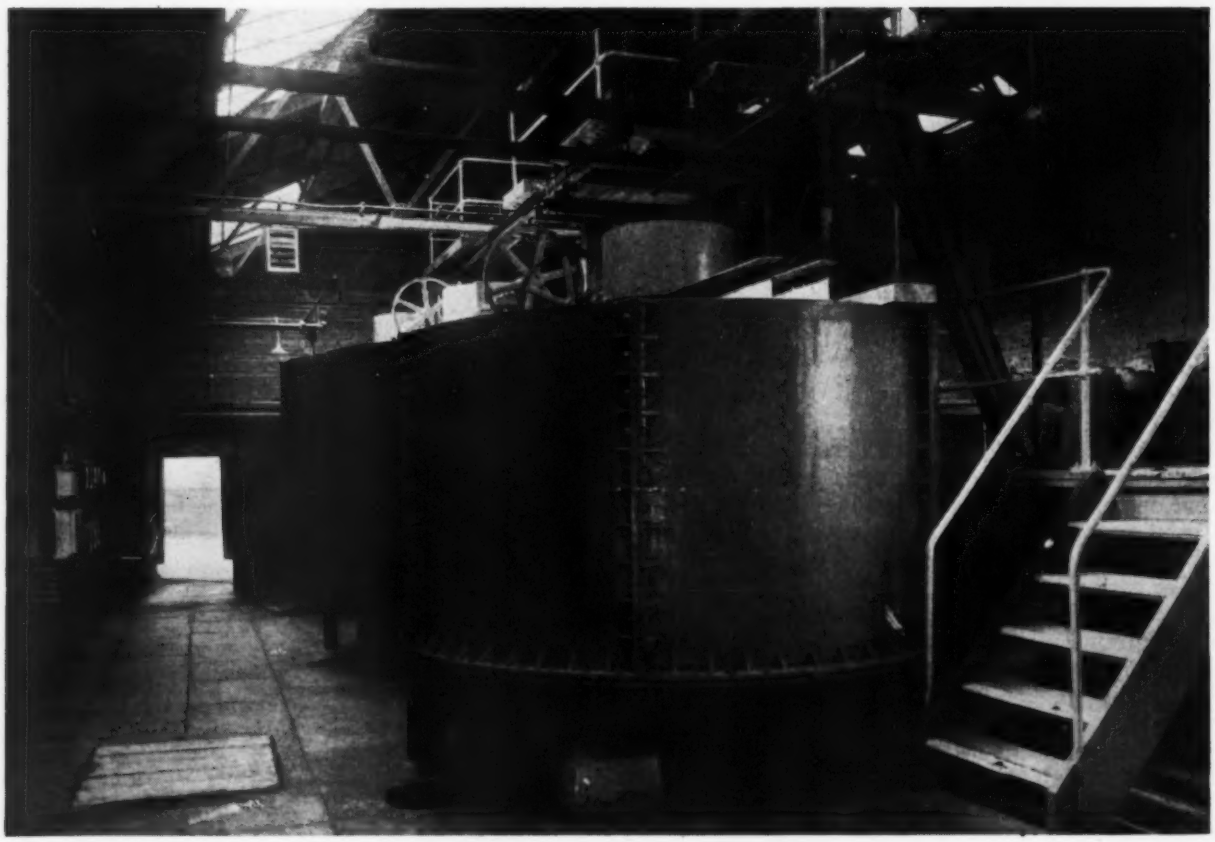
The rock salt deposits on the site of these works are some 200 feet below ground level, a depth which varies throughout the county.

It is by the action of underground springs that strong brine is formed, which constitutes the source of manufactured salt. This brine is obtained by sinking steel-lined boreholes into the deposits of brine, which is pumped into storage tanks.



The crystals are fed into oblong moulds.

The moulded salt is turned out and placed in the hot houses for a further period of drying.



In the vacuum evaporation process, the brine is first chemically treated in the purification plant to eliminate calcium and other salts found in the brine as pumped from the ground.

Open Pan Evaporation

By the open pan process, the rapidity of evaporation governs the size of crystals. At boiling point the saturated solution yields very fine crystals and, at lower temperatures, various sizes of coarse ones are formed. For the production of lump salt, the brine is heated by means of coal-fired furnaces situated below shallow steel open pans. As evaporation proceeds, operators, stripped to the waist, work in the steamy, humid atmosphere and draw off all the fine crystals by means of a specially perforated scoop or skimmer.

The crystals are fed into oblong moulds which are affixed to the side of the pans for draining. This takes about two hours, after which the moulded salt is turned out and conveyed to the hot houses, under which pass the flues of the pan furnaces. The blocks remain here for a further period of drying before being conveyed to the packing rooms, where they are either crushed or cut by machines into smaller blocks to be wrapped and despatched for use as cooking salt.

The salt produced in larger steel open pans, called "common pans," is generally used for the curing of hide and skins. Evaporation is carried out in the same way as aforedescribed, except that instead of filling the salt into moulds it is scooped out of the pans and stored in heaps. It is left to drain in this state for about three weeks, and is then sold in bulk or bags.

Different industries require salt crystals of specified sizes, and it is for this reason that the open pan process is employed. The production of fine salt is, however, being carried out by another process, but working the small lump pans is continued for the production of block salt, which still has a demand in the South and Midlands of England, although this demand is gradually changing in favour of the purer powdered cooking salt.

Vacuum Evaporation

With the demand for purer grades of salt for household purposes, vacuum evaporation of the brine has been adopted. The brine for this process is first chemically treated in the purification plant to eliminate calcium and other salts found in the brine as pumped from the ground. The residue from this process is supplied to local farms for agricultural purposes.

Evaporation takes place in the triple effect evaporators.

In the vacuum plant the pure brine is evaporated by means of steam in triple effect evaporators, the fine, pure salt being extracted from the conical shaped bases of the evaporator and passed through a rotary vacuum filter which, by means of suction and warm air, dries the salt to approximately 3½ per cent. moisture. The salt, which is dried on the slowly revolving drum of this machine, is finally cut from its surface with a stainless steel knife to be conveyed by belt conveyor to the packing room. This type of salt is known in the trade as unstoved vacuum salt, and is used for food and other industries where a fine crystal product of pure grade is required.

Stoved Vacuum Salt

For a stoved vacuum product the salt is passed through another drier in which, by means of warm air, the salt is perfectly dried. This grade is used for such processes as bread, butter, and cheese making and bacon curing. Great attention is paid to hygiene throughout the factory for the production of these high-class grades for the food industry.

As a result of tests carried out on behalf of the British Standards

The salt emerges from the rotary vacuum filter and is conveyed to the packing room.

Institution, it has been found that stoved vacuum salt suitable for dairy purposes is almost free from micro-organisms as manufactured, but appreciable contamination has been detected in samples taken from farms and dairies. Exposure and careless handling are causes of contamination, but it is also essential that the materials and methods used for packing salt shall be restricted to those which prevent subsequent contamination. For this reason the use of sacks previously used for other goods was strongly deprecated by the British Standards Institution, who recommended that stoved vacuum salt should be packed in cotton-lined hessian sacks or in new paper bags suitably closed by sealing or sewing. It was further recommended that unstoved vacuum salt should be packed in cotton-lined sacks only (British Standard 998, 1941, with amendment issued in April, 1942). This recommendation is strictly adhered to by the company, who also keep a close laboratory control to ensure the consistency of the various grades of salt produced.

Uses of Salt

Coarse salt is used for fish curing, bacon curing, and the curing of hides and skins for leather and other industrial processes, including water softening processes. Unstoved vacuum salt is used for regenerating water softening plants, and this allies the salt industry with the cotton, wool, and art silk trades where soft process water is used in the fixing of dyes and colours. Other uses are for bacon curing, in the canning industry, and in other industrial processes, *e.g.* the steel industry for hardening files and for the melting of aluminium.

As already mentioned, stoved vacuum salt finds a ready use in the manufacture of foodstuffs and the dairy industry, and forms the basis of Arisal cooking salt and Selva table salt which are machine packed in cartons and cardboard and tin drums.

Arisal cooking salt is machine packed in cartons.

Salt is despatched by means of road and rail, and is delivered to all parts of the country and to various ports for export to such countries as Iceland, Norway, Sweden, Denmark, Africa, New Zealand, Australia, the West Indies, and Canada.

Although in Great Britain there is no definite legislation at present in effect which demands the addition of iodine to salt, the company has for many years supplied iodised salt for the home and overseas markets, and therefore is well able to meet any increased production of this class of salt should the recommendation of the Medical Research Council become fully effective.

The works comprise several large stores for sacks, cans, and other containers, together with a large department for the maintenance of plant, a large proportion of which has been designed by the company's own engineers. The foresight of the management has enabled continuous development to be undertaken on generous lines; the buildings, roadways, railways, and spacious lawns provide an excellent architectural appearance.

The welfare of the staff has not been neglected. A canteen is provided and a five-day week is in force; in addition the staff receive two weeks' holiday with pay each year.

SUPPLIERS OF EQUIPMENT

Centrifugal pumps in bore houses: *Sulzer.*
Weighing machines: *W. Hodgson and Sons.*
Cans: *The Metal Box Co.*
Mixing machines: *Wm. Gardner and Sons (Gloucester).*
Hand trucks: *H. C. Slingsby.*
Recorder: *The Brown Instrument Co., Philadelphia.*
Rotary vacuum filter: *International Combustion Ltd.*
Steam engine: *Browett Lindley Ltd.*
Filter press: *Manor Engineering Co.*
Control gear: *Metropolitan-Vickers Electrical Co.*

World Trade in Fruit

WORLD production of most kinds of fruit is now greater than ever before. Recent statistics* of production and trade show, however, that the quantity of fresh fruit entering international trade has not fully recovered from the drastic reduction suffered in the war years. The total exports of the principal fruits, which in 1934-38 averaged nearly 5½ million tons annually, amounted in 1949 to little more than 4½ million tons. Commonwealth countries have shared in the decline, although their production has increased. Trade in canned and dried fruits and wine was also appreciably smaller in 1949 than before the war. Currency difficulties and increased consumption in some of the producing countries are among the factors which have retarded the recovery of world trade.

The United Kingdom was again the largest importer of fresh, canned, and dried fruits. Although imports were lighter than in 1948, the supplies of fresh fruit available for consumption during the year exceeded 1,600,000 tons, of which home-grown fruit accounted for over 760,000 tons, or 47 per cent.; before the war home production represented little more than 20 per cent. of the total.

One of the most notable features of fruit production is the greatly increased output of apples in the United Kingdom, where the average crop in 1947-49, exclusive of cider fruit, was over 500,000 tons compared with little more than 200,000 tons in 1934-38. The increase in apple production in Canada and Australia has been less marked, but there has been an all-round increase in the production of other fruits both here and in South Africa and New Zealand.

Exports of all of the principal fruits, except bananas and grapefruit, increased in 1949. Commonwealth countries accounted for about 11 per cent. of total exports of fruit, the same proportion as in 1948; before the war, however, the Commonwealth's share was about 15 per cent. Imports into the United Kingdom were smaller than in 1948, but totalled about 870,000 tons.

Canned fruit production in both Commonwealth and foreign countries showed some expansion in 1949 and the output of the principal countries exceeded 1½ million tons, or nearly 15 per cent. more than in 1939, the peak pre-war year. Production in the United Kingdom, Australia, Canada, and South Africa was, in each case, appreciably greater than before the war, and that of the United Kingdom established a new record at about 90,000 tons.

Exports of canned fruit from Australia and South Africa were fairly heavy in 1949, but those from Canada and the United States were again affected by currency difficulties. In the absence of supplies from the United States, imports into the United Kingdom totalled 47,000 tons, as against 282,000 tons, which was a record, in 1939.

Raisin production in the United States in 1949 was appreciably heavier than in 1948, and the world output, at about 430,000 tons, was the highest since 1944. The Australian crop, however, was poor and there was a further decline in production in South Africa. A small reduction in the Australian currant pack was more than offset by heavier production in Greece, and the total supply was heavier than in any year since 1940. Exports of raisins fell from the high level of 1948, but there was an increase in currant exports.

In 1949 the world output of wine was little more than 3,500 million gallons, as against 4,500 million gallons in 1938 and 1939. While the output of the Commonwealth is relatively very small, there have been developments in both South Africa and Australia, and in 1949 they produced some 85 million gallons, over 30 million gallons more than in 1939. Exports from the Mediterranean countries were slightly larger than in 1948, but those from the Commonwealth were smaller. Imports into the United Kingdom, which in 1939 totalled over 17 million gallons, amounted in 1949 to less than 9 million gallons.

* *Fruit.* A summary of figures of production and trade relating to fresh, canned, and dried fruit and wine. Pp. 116+xv. Published for the Commonwealth Economic Committee by H.M.S.O. Price 5s. net.

The Baking Industry

Progress in 1950

S. WALTER BUTTERWORTH, B.Sc.(Tech.), F.R.I.C.
Birkett and Bostock, Ltd.

DURING the year under review, several important changes have taken place in the baking industry. The most obvious and significant has been the change from a seller's to a buyer's market in flour confections, and indicates that those engaged in production are once more compelled to give serious thought to the wishes of the consumer.

The flour confectionery sales graph has begun to alter direction. It no longer remains parallel to the horizontal axis at a distance determined by the allocation of raw materials. Unfortunately this does not mean that all raw materials are now freely available to the confectioner. He may increase his supply of fat and sugar by purchasing sweetened fats blended in varying proportions and made from fats from several different sources. He has been able to buy dried fruit mixed with a few granules of sugar, or he may have tried one or more of the imported "mincemeat" blends offered to him. Eggs were very scarce and variety in confectionery suffered accordingly.

Cake Quality Improves

Imported mixtures of raw materials cost more than the ingredients from which they are compounded, and therefore confectionery price control limits their uses. Nevertheless more cakes and, on the whole, better cakes are more readily available than they were a year ago, and the man who knows his business best is again beginning to realise the value of his expertise. How long this situation may be expected to continue in view of world events it is difficult to say.

The improvement in quality and variety of confectionery is also due to some extent to the increased number and range of competitions arranged by various associations throughout the country. Such exhibitions of craftsmanship not only encourage competitors to produce better work, but also show the spectator what can be done. They provide an opportunity for the younger people in the industry to see confections which few of them have seen before. Although it is true that the emphasis in competition work is on appearance rather than eating quality, and that "making what the judges want" is not conducive to bold experimentation, it is undeniable that exhibitions generate in those taking part a degree of enthusiasm seldom met with elsewhere. Exhibition work to the craftsman has many of the virtues of research to the scientist; it can be both a stimulus and a challenge.

Flour Confectionery

Interesting papers dealing with flour confectionery include one by Finney *et al*,[1] who have investigated the effects of variations in flour quality, fat, sugar, and ammonium bicarbonate on the spreading and surface character of "sugar snap cookies." The work was carried out with a view to arriving at an acceptable standard test formula for these goods. It is suggested that "a formula containing 60 per cent. sugar, 30 per cent. shortening, and 0·75 per cent. ammonium bicarbonate" is satisfactory.

It is unfortunate that the basis of the percentage is only given in a subsequent paper.[2] The usage of the term "per centum" with reference to 100 parts of flour in a formula can be misleading, because it obscures the important fact that when the amount of any single ingredient in a recipe is varied then the formula percentage of every other ingredient is affected. There are good reasons why the use of "percentages" based on flour should be discouraged. The practice was popularised when high ratio cake formulae were introduced and the sugar content was often referred to as "140 per cent." The custom is one that does little to clarify and much to confuse the descriptions and results of test baking procedures to which it is often applied.

Shellenberger *et al*[3] use the same convention in their paper on cake quality and flour particle size in which, with the particular "commercial white cake" investigated, they find increasing quality with decreasing particle size. Their particle groups were 37 microns or less, 37 to 53 microns, and over 53 microns. This paper is a continuation of the work of these authors on granularity.

Flour Extraction Rate

In breadmaking one of the outstanding features of the year has been the reduction of the flour extraction rate from 85 to a nominal 81 per cent. with a consequent improvement in flour colour. Another was the return to bread slicing and waxed paper wrapping. The change from 85 to 81 per cent. flour was accompanied by the annual increase of English wheat in mill grists to 45 per cent. As the proportion of English wheat declines, the improvement in the milling quality of wheat blends should lead to an even greater technical benefit from the reduced extraction rate.

Although variations in flour quality from mill to mill were considerable at 85 per cent. extraction, the differences at 81 per cent. extraction appear to be still more marked, and colour differences are more obvious. Under carefully controlled manufacturing conditions improved flour colour is translated into improved crumb colour. In a keenly competitive market with bread sales showing a weakening tendency, flour quality is receiving closer attention by the observant baker, and the miller whose product is below par is probably beginning to feel the effect. In view of the very poor wheat ripening and harvesting conditions experienced throughout

the country last year a good deal of trouble had been anticipated with English wheat in the grist at the 40 per cent. level or over during the autumn. At the time of writing, however, these fears have not been realised.

Wheat Problems

The English wheat grower has not been the only one in trouble in 1950, because the Canadian wheat crop, which promised to reach a new high record, has not only been appreciably reduced in quantity but quality has also been affected. In "Canadian Wheat, 1950,"[4] the opening paragraph states: "About half the 1950 crop of spring wheat was frozen on the night of August 16. This disaster drastically reduced the amount of wheat entering the top grades, but it did not directly affect the quality of No. 1 and No. 2 Northern since frosted wheat is almost entirely excluded from these grades."

This kind of trouble has not been so severe for over twenty years in the prairie provinces, and it has made the work of the grading authority even more difficult than usual. Those who carry the onerous responsibility of wheat grading in the Dominion have indeed an unenviable task because no matter how carefully and objectively the grading is carried out the grading authority is usually under heavy fire from two directions. The grower is always inclined to think that his crop is better than it is officially graded, and the buyer sometimes has the idea that the contrary is the case. That this is so is probably the best tribute that can be paid to the care and integrity of those who administer the grading regulations.

Of interest to bakers is the following quotation, again from "Canadian Wheat, 1950": "No 5 wheat will be an unusually large grade this year, and will contain a high percentage of frosted, green, and immature kernels. Protein content will be around 13·0 per cent., but will vary widely among parcels. Compared with No. 4 Northern, bushel weight and flour yield are lower, ash content and gassing power both higher, and colour of flour much darker. The dull grey colour of flour cannot be removed by bleaching . . . loaf appearance is poorer, crumb colour is greyer, and texture is coarser and more open. Although the flour takes up a large amount of water when mixed into dough it does not hold it during fermentation and later becomes slack and difficult to handle. No. 5 wheat is too poor in quality for inclusion in a normal mill mixture, but some may be useful if markets can be found for flour of dark colour and reduced baking strength."

The paragraph is quoted at length to emphasise the fact that the Canadian grading authority fully understands and takes into account the baking characteristics of the grain as well as its behaviour on the mill.

Wrapped and Sliced Bread

The demand for wrapped and sliced bread in those areas where this service is available is at least equal to that experienced in 1939, and it has led to difficulties in obtaining sufficient paper. The price of waxed paper has risen considerably during the last few months, and any increase in the sale of wrapped and sliced bread must be regarded as a mixed blessing by bakers who observe with concern the diminishing gap between production costs and receipts.*

In addition to the not inconsiderable technical difficulties inseparable from wrapping and slicing, the humid summer of 1950 gave rise to rather more than the usual amount of trouble from bread mould. It is clear that mould control as well as rope control will add interest to the lives of those whose business it is to ensure that bread not only reaches the consumer in a fresh and palatable condition, but will also remain so until the last crumb is consumed. The problem is not made easier by the fact that bread is not always stored by the shopkeeper or by the consumer with the care and thought bestowed upon it by the manufacturer. In this connexion, the experimental evidence indicating that mould spores are destroyed when a wrapped loaf is subjected to cathode rays[5] is interesting and may lead to a suitable commercial procedure in the future.

* An increased price allowance for wrapping has now been granted.

Government Enquiries

Bakers have recently been interested in two Government enquiries, one concerning weights and measures, and the other concerning the limitation of night baking. The weights and measures enquiry covered much ground, including the present regulations governing the weight of bread when "exposed for sale." This is obviously a matter of the greatest importance to the industry because the law has been construed in such a manner as almost to deprive the baker of any valid defence in the event of a loaf being deficient in weight. He has to rely heavily on the understanding and sense of fair play of the inspectorate. Fortunately these qualities are seldom absent, but when they are the results may be inequitable in the extreme.

With modern methods of production a faulty divider setting, for example, even though remedied within a few minutes, may cause a number of loaves to be fractionally light in weight and may lead to the prosecution of a firm making tens of thousands of loaves each day. The fact that over 99 per cent. of these loaves may be half to three-quarters of an ounce in excess of the required weight—a very common occurrence—can form no part of an acceptable defence. Those bakers who check divider performance systematically clearly realise the limitations of these machines and adjust the setting accordingly, but even with the greatest care and constant supervision it is impossible to ensure that every dough piece is of exact weight.

Bread differs from other commodities sold by weight in that the weight of the loaf at the point of sale is not only largely determined before baking but is affected by the conditions of baking and of subsequent storage.

The weight of the loaf is also incapable of adjustment after baking. For these and other reasons bakers await with interest the publication of the report and recommendations of the weights and measures enquiry before which evidence was given by several bakery organisations.*

The difficulties of legal interpretation have been exemplified by two recent and mutually contradictory decisions in magistrates' courts. It has been held in one court that a sliced loaf remains a loaf for the purposes of the weight of bread regulations, and in another court that the contrary is the case. The weight of bread is a sufficiently difficult problem both technically and legally without the addition of further complications of this kind.†

At the time of writing, the enquiry into the limitation of night baking is still in progress. The present enquiry follows reports on the same subject by the Mackenzie and the Alness committees and the Baking Industry (Hours of Work) Act of 1938.

Although the subject may perhaps best be regarded at this time as *sub judice*, it is permissible to hope that some formula may yet be discovered capable of reconciling widely varying points of view. It is probably true that the real difficulty lies in the fact that the viewpoints are derived from differing premises and arguments of such a kind are notoriously difficult to resolve.

Progress in Education

In the educational field steady progress has been made not only within the schools but also extramurally. Mr. A. R. Daniel of Manchester has successfully pioneered trade visits to Switzerland, and his excellent example has been followed by others. Mr. Daniel has also arranged the return visit of a group of Swiss bakers to this country. Mr. E. A. Coleman of Margate attended the fortieth anniversary celebrations of the Netherlands School of Milling and Baking at Wageningen, and gave a paper there on "Technical Education for the Baking Industry in England and Wales."[6] Mr. E. F. Mitchell of Worthing, who has for many years played a leading part in bakery education, visited America and was greatly interested in the teaching methods of and courses offered by the American Institute of Baking.[7]

Teachers' conferences have been held in Blackpool and in Southampton. The latter, organised by the Ministry of Education, was a week's residential course with papers on many aspects of teaching. Bakery hygiene has been a prominent topic for discussion at such conferences probably because of the interest aroused by the publication of model bye-laws arising from Section 15 of the Food and Drugs Act, 1938.

The zeal which began the cleaner food campaign with standards almost impossible of achievement in commercial practice has now given place to a more sober appreciation of the real risks and the practicable steps which can be taken to reduce them to a minimum. This was made clear in an address on the subject by Morley Parry,[8] in which he described the main need in producing clean food as being the inculcation of a "state of mind" capable of appreciating the principles of hygiene and having the determination to apply them.

Technical Contributions

The technical literature in the breadmaking field shows that a good deal of attention is still being paid to crumb softness. Papers by Edelmann *et al.*,[9] Skovholt and Dowdle,[10] and Marnett and Selman,[11] have dealt with various aspects of crumb softness and the factors influencing it. Edelmann, in reviewing some of these factors, once more directs attention to "the use of maximum water absorption coupled with minimum baking period" in obtaining crumb softness. He reports that "increased absorption is effective in retarding the increase in crumb firmness especially in the presence of G.M.S. or P.O.E.M.S."

Crosland and Favour in a study of the various techniques used for the measurement of the firmness of bread[12] have found fixed deformation preferable to fixed stress procedures. They conclude that "the slope of firmness/age curves is a parameter characteristic of the material tested and is not affected by moderate changes in technique with respect to per cent. deformation provided that per cent. deformation is fixed for the duration of the test."

Doty and Sherwood[13] discuss the improving effects of ammonium persulphate at levels of 1 to 20 g. per 100 lb. of flour and state that the results obtained compared favourably with those from nitrogen trichloride. They comment on the absence from the literature of evidence concerning the effects of persulphate, although it has been used for many years. Arnold and Goble[14] give this improver a clean pharmacological bill of health, and Doty and Sherwood are unable to discover any deleterious effects on the vitamin content of flour.

An interesting paper by Conn *et al.*[15] concerns the "fate of potassium iodate when added to bread dough." They concluded that the major decomposition product, as might be expected, is iodide, and that less than 7·5 per cent. of the original 3·5 to 4 p.p.m. iodate remains in the baked bread. They used radioactive iodine (I^{131}; half life 8·0 days) in the investigation, and measured the electron emission by Geiger counter equipment.

U.S. Bread Standards

In the U.S.A. the publication in the Federal Register of August 8, 1950, of the proposed standards for several varieties of bread was a matter of some interest to British bakers. The detailed way in which the work has been done is indicated by the fact that following the definition of "White Bread, Rolls, and Buns," no less than fourteen paragraphs deal with permitted optional ingredients.[16] These include

* This report has now been published (Cmd. 8219, H.M.S.O.).

† A sliced loaf has now been declared by Statutory Instrument to be "a loaf of bread" for the purpose of weight inspection.

"Shortening, which may contain lecithin, and which may contain not more than 25 per cent. by weight of mono- and diglycerides of fat-forming fatty acids"; "inactive dried yeast of the genus *S. cerevisiae*, but the total quantity thereof is not more than 2 parts for each 100 parts by weight of flour used"; "calcium propionate, sodium propionate, or any mixture of these, but the total quantity thereof is not more than 0·32 part for each 100 parts by weight of flour used." Polyoxyethylene derivatives are not included in the list of optional ingredients.

A total solids minimum of 62 per cent. is specified, and the method of determination is laid down. The weight requirement is that bread is "baked in units each of which weighs one-half pound or more after cooling," while rolls weigh less than one-half pound. A statement of any ingredient except vinegar "added to retard spoilage" must be made on the label. Lactic acid is included in this group of additives "in such quantity that the *p*H of the finished bread is not less than 4·5."

Milk bread is defined as bread in which "milk is used as the sole moistening ingredient in preparing the dough." If milk is not used equivalents are permitted at stated levels. In raisin bread not less than 50 lb. of seeded or seedless raisins must be used to each 100 lb. of flour.

There is no doubt that a careful study of the standards by bakers is well worth while because they deal with a number of points which have been widely discussed on this side of the Atlantic.

Determination of Flour Colour

Reference has been made earlier to an increasing interest in flour colour, and the recent development by Kent-Jones, Amos, and Martin[17] of a photoelectric method of determining flour colour is timely. These authors have demonstrated a method of evaluating flour colour as an indication of flour grade, and the instrument they have designed is claimed to give readings independent of the effects on the sample of natural or artificial bleaching. The dial readings of the instrument are linearly related to the logarithms of the corresponding ash content of flours tested. Kent-Jones also reports on the results obtained from the Chopin Zymotachygraph, which has been designed with a view to determining the gas retaining power of fermenting doughs.

Analytical and Other Procedures

Other contributions to the literature include a paper by Fraser and Weston[18] in which they describe a gasometric method for the estimation of *creta preparata* in National flour. The apparatus used resembles the Chittick apparatus for measuring the gas evolution of baking powders.

Coppock and Bradshaw[19] have described a method of examining biscuits for the presence of extraneous materials such as animal hairs, insect fragments, and mould spores. Hawthorne[20] reports work on the stabilising effect on egg albumen of controlled yeast fermentation to remove glucose. He states that dried albumen of good solubility, aerating power, and storage properties, and free from objectionable flavours, can be obtained from yeast fermented centrifuged egg whites. Hinton[21] and Harvey[22] in their work on pectin jelly formation deal with the setting times and temperatures of pectin jellies. Their results are concerned with heated jellies and do not refer to the cold setting pectin jellies widely used in flour confections up to 1939. Pectin in the food industry was also discussed by Jones, Oliver, and Chorley.[23]

Coppock[24] has pointed out that many new materials used in food processing need to be carefully examined pharmacologically in order to ensure that they are not in any way deleterious. He emphasised the need for greater knowledge in this "undeveloped avenue of research in food science." The papers by Freeland and Bradley on "Biscuits," by Fuller on "Cakes," by Yudkin on the "Nutritive Value of Flour Confectionery," and the introductory paper by Butterworth were also published during the year.[25]

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1 *Cer. Chem.*, **27**, p. 30.
2 *Ibid.*, **27**, p. 42.
3 *Ibid.*, **27**, p. 106.
4 *Crop Bulletin*, No. 37.
5 *Milling*, 1950, p. 558.
6 *N.A. Rev.*, 1950, p. 500.
7 *Ibid.*, 1950, p. 647.
8 *Ibid.*, 1950, p. 852.
9 *Cer. Chem.*, **27**, p. 1.
10 *Ibid.*, **27**, p. 26.
11 *Ibid.*, **27**, p. 349.
12 *Ibid.*, **27**, p. 15.
13 *Ibid.*, **27**, p. 409.
14 *Ibid.*, **27**, p. 375.
15 *Ibid.*, **27**, p. 296.
16 *Baker's Digest*, Oct. 1950, p. 88.
17 *Anal.*, **75**, pp. 127 and 133.
18 *Ibid.*, **75**, p. 402.
19 *J.S.F.A.*, **1**, p. 57.
20 *Ibid.*, **1**, p. 199.
21 *Ibid.*, **1**, p. 300.
22 *Ibid.*, **1**, p. 307.
23 *Chem. and Ind.*, 1950, p. 185.
24 *Ibid.*, 1950, p. 110.
25 *Ibid.*, 1950, p. 320; 1949, p. 771; 1950, p. 158; and 1950, p. 126.

Non-caloric Sweetening Agent

WHILE saccharin has proved over the years to be an innocuous non-caloric sweetening agent, its instability to heating and bitter aftertaste have been distinct drawbacks. According to an article by R. K. Richards, J. D. Taylor, J. L. O'Brien, and H. O. Duescher, in the *Journal of the American Pharmaceutical Association*, Scientific Edition, **40**, 1, 1951, cyclohexyl sulphamate sodium (Sucaryl sodium), a new chemical substance, although less potent in sweetening power, possesses certain advantages over saccharin in that it withstands boiling and has a clean, sweet aftertaste. Pharmacological studies reported by the authors reveal that the new substance is non-toxic in acute and chronic experiments in various species; in actual fact, it exerts no specific physiological effect.

Sucaryl sodium is excreted largely unchanged by the kidneys, has no effect upon oxygen consumption, and does not interfere with the digestive enzymes. Its presence in the urine does not interfere with any of the usual chemical tests that might be applied, or cause false positive results in any instance.

Gelatine and Glue Research

In addition to representatives of Member Firms, the Third Research Panel Meeting of the British Gelatine and Glue Research Association was attended by numerous visitors, including Prof. F. J. W. Roughton, F.R.S., and Mr. B. G. McLellan, representatives of Government laboratories and of other research associations. Members of three of the Research Panels of the British Food Manufacturing Industries' Research Association were also present. The meeting was devoted to papers on various aspects of the uses of gelatine and glue.

Importance of Research

The introductory address was given by Mr. E. H. Moore, M.A., who said that since in the long run the prosperity of our industry depended on the use made of its products, as well as on the ability of the industry to produce its goods efficiently, it was as important for research to be performed on the applications of materials as on the materials themselves and their methods of manufacture. This was as true of the gelatine and glue industry as of any other, and consequently it was vitally important for the Research Association to concern itself with those matters.

Gelatine and glue were frequently not used to the best advantage, because of ignorance of the precautions which must be taken. Thus, for instance, because gelatine was a medium for the growth of bacteria, only sufficient gelatine solution should be prepared for immediate use, and storage of solution or gel should be avoided. Vigorous action was needed to improve common practice in such matters.

Special Problems

Dealing with special problems connected with the use of gelatine in foodstuffs, Mr. J. W. Selby, B.Sc., A.R.I.C., said that some 7,500 tons of gelatine were used in the preparation of foodstuffs every year. Certain analytical characteristics were controlled by a Statutory Instrument laid down by the Ministry of Food. This stipulated upper limits to the amounts of ash, heavy metals, arsenic, etc., which may be present. In general there was no outstanding problem connected with meeting this specification, but, in view of the increasing concern over questions of purity in foodstuffs, there might be a tendency to tighten these requirements as time went on. In the same way, manufacturers might have to face more stringent requirements of bacteriological purity. As the use of preservatives was forbidden, the problem was more difficult.

In general, the calcium content of gelatine was not critical, but it was essential that low calcium gelatine should be available for those applications in which acids with insoluble calcium salts occurred. This consideration applied particularly to table jellies and meat goods in glass packs.

Physical Characteristics

Of the physical characteristics, jelly strength was much the most important. The Bloom gelometer was satisfactory for characterising the gelatine used, but there was a need for a method of measuring the jelly strength in the final preparation under the conditions in use. Such a method would have to be capable of dealing with, say, table jellies, where the final concentration was of the order of 3 per cent., and the jellies set at 20°-25° C., and with jellies for meat products. Changes in jelly strength during processing could then be followed. For many purposes a gelatine whose jelly strength changed only slightly with temperature in the range of 20°-30° C. approximately was needed, rather than one with an exceptionally high strength at 10° C. There was some variation among gelatines in this respect, which needed investigation.

Viscosity was not of general importance, but the melting and setting points were very important, both as regards temperature and rate. Much more needed to be known of the effect of heat degradation and *p*H on the properties of gelatine solutions and gels.

The surface properties of gelatine were important, particularly in ice cream, where it was used to control texture and firmness. Foaming properties were undesirable, except for special applications, such as in marshmallows.

Powdered Gelatine

Even the physical form of the finished product presented its problems. Powdered gelatine was undoubtedly advantageous in many ways, but the rapidity with which it absorbed water brought difficulties in the preparation of very concentrated solutions such as were used for table jellies.

Other papers on the subjects of "Paper Sizing" and "Some Aspects of the Use of Gelatine in the Photographic Industry" were given by Mr. G. F. Glover and Mr. R. C. M. Smith respectively.

Breadmaking Simplified

A recently published handbook,* although planned to cover the ground of the City and Guilds of London Intermediate Syllabus in Breadmaking, may nevertheless find a place on the bookshelves of those not studying for any examination.

The opening chapters deal with the bakehouse procedure to be followed when training new students, and details are given of the preparation and properties of the main raw materials. The section on fermentation and breadmaking processes is thoroughly comprehensive, and a short descriptive account of the various machines in general use in all types of present-day bakeries is included. A chapter on the nutritive value of bread deals in a simple and straightforward way with this important subject.

The aim of the author has been to make a scientific approach to practical breadmaking with the minimum use of technical language, and his book serves as an introduction to the more detailed studies of breadmaking which are covered in larger and more exhaustive volumes.

* *A Primer on Breadmaking.* By Edmund B. Bennion. Oxford University Press, London. Price 10s. 6d.

Air Conditioning for Confectionery Processing

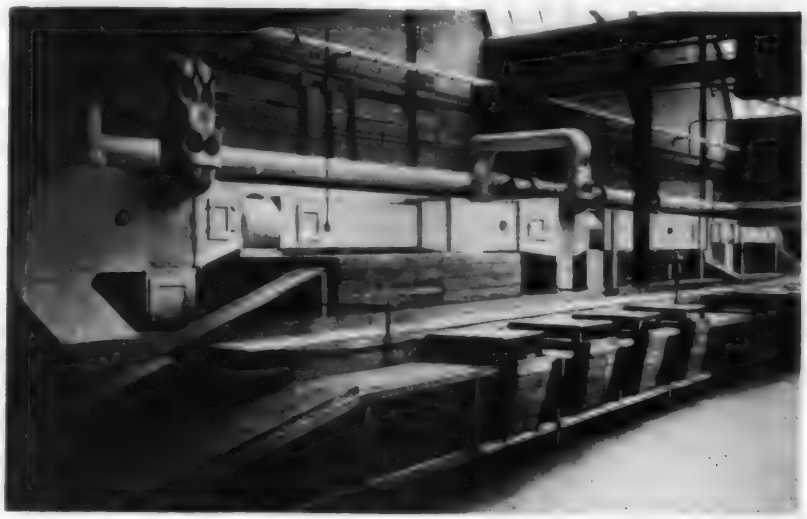
H. POOLE

The Brightside Foundry and Engineering Co., Ltd.

Production of all types of chocolate is greatly improved if the departments of the factory in which the chocolate coolers are situated, and in which the packing of chocolate is carried out, are maintained at a constant dry bulb temperature and relative humidity throughout the year, irrespective of outside atmospheric conditions. This ensures that the product leaving the conveyor coolers is constantly in the correct atmosphere, thus eliminating the possibility of spoilage by bloom. The storage and despatch portions of the factory should be similarly conditioned, so that from the time the product leaves the manufacturing process until it is despatched it is kept in perfect condition at all times of the year.

A MAJOR advantage in installing air conditioning plants in the appropriate sections of the factory is that during very warm summer weather, when the atmospheric conditions are above, say, 70° F. dry bulb, it is still possible to continue the manufacture and packing of the chocolates. Those confectionery factories which are not air conditioned have to cease manufacture during warm weather, and considerable tonnages of chocolates may be completely ruined while in the despatch and storage departments.

Another important point is that, while maintaining definite temperature and humidity conditions, the ventilation of the factory is also controlled; this means that the operatives are working in ideal conditions throughout the year. This promotes a "happy" factory, thus increasing the production.



Mechanical coolers.

The plants which have been installed in the various factories for conditioning manufacturing and packing departments are in several forms; they can be large centralised or unit type plants

The centralised plant illustrated is of large capacity, the refrigeration tonnage being approximately 120 tons. This particular installation is of interest because, to economise in the use of refrigeration, the 20 per cent. fresh air supply is cooled during the summer months by the use of Artesian well water for the small spray type air washer. The recirculated and fresh air is then passed through a large washer, using chilled water at a temperature of 38° F. The conditioned air is distributed to the factory through a system of trunking, which is fitted with specially designed draughtless type air diffusers; the return air is brought back to the plant through a similar system of trunking.

A typical centralised plant room.

The plants are in all cases completely automatically controlled, both for temperature and hu-

midity, and the air is filtered by dry type air filters. The passing of the air through the washers also cleans it.

The conditions maintained throughout the year by this plant are 63° F. dry bulb, 47° F. dew point, irrespective of the internal heat load and the outside atmospheric conditions. The plant provides ventilation at the rate of approximately nine changes of air per hour in the factory, 20 per cent. of which at all times is fresh air.

One important point in the conditioning of any space is to see that the building is adequately insulated; this has a vital bearing on the capacity of the air conditioning plants. Where refrigeration is used which tends to be rather expensive in initial cost, it can well be seen that thought given to the construction and insulation of the building is of great importance. In the installations for which the author has been responsible, the thermal conductivity of the external walls and roof of the factory has not been in excess of 0·2 B.Th.U. per sq. ft. per degree per hour.

Enrobed and block chocolate in its final form has to pass through mechanical coolers. The installation illustrated comprises a number of axial flow type air fans, brine air coolers, and insulated timber air ducting. The system is designed to provide cooling in three stages, each stage being thermostatically controlled to obtain the requisite cooling.

In addition to the air conditioning plants already described, ventilating, heating, and cooling plants may also be installed in subsidiary parts of confectionery and other food factories, *e.g.* in welfare and canteen buildings and in ablution blocks. It is often possible, where a chilled water installation is used for the air conditioning plants to feed concealed heating panels or unit heaters with chilled water during the summer months, thus effecting a certain amount of cooling.

The air conditioning plants described above use chilled water; this is of advantage where chilled water is also required for process

Unit type plant for small enrober packing department.

purposes in the manufacture of confectionery, because it enables great flexibility to be obtained, but there are several advantages from the air conditioning point of view in using direct expansion cooling batteries in place of the chilled water air washers; this means that independent refrigeration equipment is installed for the individual conditioning plants.

This type of plant is of lower first cost; also the running costs tend to be less. Although it is thermally more efficient, the advantage of flexibility generally in the factory is lost.

New Books Register

Orders for any of the books listed below, or scientific and technical books in any language, may be placed with the Books Department, FOOD MANUFACTURE, *17, Stratford Place, London, W.1. A selected stock of books is carried and may be inspected at the above address. Prices given do not include postage.*

Reports of Department of Agriculture for Scotland, 1950 (Command Papers). *Agriculture in Scotland.* H.M.S.O., London. 3s.

Colonial Office. *Locust Research & Control, 1929-50.* H.M.S.O., London. 5s.

Wine Technology

PRODUCERS of British wines and champagne ciders will find much of interest in a recently published book* which is the first of a series written by scientists working at Geisenheim Institute.

Yeasts, moulds, and bacteria are of as much importance in wine making as in beer technology, but have received less consideration in the literature; this collation of recent work is therefore a welcome and valuable contribution. In addition, Prof. Schanderl's description of his work on the sherry process will be studied with interest. Proof is given in this book that yeast, during its oxidative stage, can live on nitrogen from the air, can reduce volatile acidity, and can thus markedly improve wine quality.

Other developments of fundamental importance are Prof. Schanderl's discovery of the occurrence of lactic bacilli in fruit tissue and his studies on the effect of sulphite on yeast behaviour. Many graphs showing the influence of Redox Potential on fermentation and on wine quality, which has been the subject of much attention of recent years, are also included.

The technique of the champagne process is discussed very fully, but exception may be taken to some of the findings on the effect of nitrogenous matter on yeast proliferation and clarification of wine. However, the real value of this book is that it provides the key to many processes which are still empirical, and it is only through a study of fundamentals that wine technology can proceed from an art to a science.—S. M. T.

* *Microbiology of Wine.* By Prof. H. Schanderl. Pp. 211. E. Ulmer, Stuttgart. Price £1 (DM. 12).

Future Articles

THE July issue of FOOD MANUFACTURE will be particularly concerned with laboratory apparatus and instruments. Apart from a symposium of recent developments in this field, there will be articles on "Developments of Modern Industrial Measuring Instruments in Food Manufacture" and "Instrumentation in the Food Laboratory."

Food and Nutrition

Four conferences and the presentation of papers on medicine, engineering and architecture, maternal and child health, veterinary hygiene, food and nutrition, housing and town planning, tropical hygiene, and hygiene in industry were features of this year's Royal Sanitary Institute Health Congress which was held at Southport from April 23 to 27. The composition of ice cream, synthetic cream, and other emulsified products and scientific control in their manufacture were the subjects of addresses in the food and nutrition section, held in conjunction with the Food Group, Society of Chemical Industry, under the chairmanship of Mr. A. L. Bacharach, M.A., F.R.I.C.

IN HIS Presidential Address, Mr. A. L. Bacharach, whose main subject was ice cream in the national diet, dwelt on the respective attitudes of the nutritionist and the hygienist, both of whose points of view, he said, must be taken into consideration by the scrupulous manufacturer.

The large consumption of ice cream made consideration of its food value a matter of interest, for it became necessary to ensure that hygienic methods neither seriously reduced what nutritive values were possessed by it nor introduced undesirable substances into it. Commenting on the fact that 70 million gallons of ice cream were consumed annually in Great Britain, he said that this meant a consumption of 1·4 gallons per head per annum, or 10 g. per day. If these figures were accepted, it would provide daily at most 1·1 per cent. of any essential nutrient and under 0·5 per cent. of calorie requirements, and could not be held to contribute significantly to nutrition.

Children and Ice Cream

There was, however, a marked difference in the amount of ice cream consumed by the young and the less young, the capacity of the former sometimes appearing almost limitless! It might be assumed that, at certain times of the year, many children took as much as five times the basic 10 g. of ice cream, and even consumed 200 g. The weight of a portion of ice cream bought from a shop or an itinerant vendor was about 50 g.

Mr. Bacharach exhibited a table showing what a child of three years eating 50 g. in a day and a child of twelve years eating 250 g. would obtain by way of dietary essentials. This meant that, given favourable conditions of age, season, and temperature, the ice cream manufacturer might, on a given day, provide children with about 15 per cent. of each of two vitally important substances besides 6 per cent. of their energy needs.

Maintenance of Nutritional Values

These estimates make it permissible for the nutritionist to say to his colleagues responsible for the production of ice cream that their acceptance of the hygienist's requirements must be tempered with a regard for the maintenance of nutritional values. It would be of importance to consider whether, at any of the processing stages described by contributors to the Conference, nutritive values were reduced or destroyed. Not only must significant contributions such as ascorbic acid, aneurin, calcium, and riboflavin be guarded from destruction, but their availability is of great importance. The reduction of nutritive value by precipitation or immobilisation of calcium or by denaturation of protein must be no more overlooked than the irreversible inactivation of ascorbic acid by oxidation or by aneurin by alkaline scission.

Fortunately, most of the processes required in ice cream manufacture were among those least likely to alter the chemical composition of essential nutrients.

Nevertheless, the extent to which losses in nutrient value became important to avoid was directly related to the amount of ice cream consumed; what might be a negligible loss from a food supplying 20 Calories a day might become considerable from one supplying 200 or 300 Calories, since these would then cease to be drawn from alternative foods that might have been richer sources of the wholly or partly destroyed nutrients.

Control of Composition

The first paper was presented by Dr. J. H. Bushill, D.Sc., F.R.I.C., his subject being the composition and manufacture of the products. He felt that the major concern of members of the Royal Sanitary Institute was with the hygienic condition and thus with the keeping properties of the products in relation to their bacteriological condition. It was with this in mind that he had written a paper which would indicate particularly how the suppression of bacterial deterioration might be achieved by the careful control of composition and by the adoption of suitable methods of manufacture.

All the products considered were colloids; each consisted of an oil or fat emulsified in an aqueous solution. Some products, in addition, were aerated, and one, ice cream, was also frozen. Being colloids with very complicated physical structures, they were liable to be somewhat unstable.

Dr. Bushill proceeded to illustrate the complexity of the products by describing the different types of simple colloidal system which existed, and indicating which of those systems was present in the various food preparations under consideration.

Ice cream was perhaps the product with the most complex structure. Butterfat or margarine fat, on being emulsified in the aqueous phase (milk), produced an emulsoid sol (the mix), which on cool-

ing became a suspensoid sol, for the liquid butterfat solidified. On passing to the freezer, the suspensoid sol was aerated, forming a foam with the suspensoid sol as the aqueous phase. As the temperature was lowered, ice crystals formed in the aqueous phase of the suspensoid sol, producing a suspensoid sol having two dispersed solid phases—solid butterfat and ice crystals. Should the temperature be low enough during the hardening process, the whole of the water might be converted to ice, and the product become a solid foam.

At the junction of any two different phases, quite appreciable molecular forces, which tended to reduce the area of contact of the phases and therefore to break down the physical structure, came into play; the greater the number of phases present and the greater the area of surface between such phases, the less stable was the product. It was for the purpose of minimising the effects of these forces that so-called "stabilisers" were used in emulsified and aerated preparations.

Manufacturing Methods

Having sketched the general structure of the products, Dr. Bushill presented an outline of the methods of manufacture and typical ingredients of ice cream, artificial and synthetic creams, butter and margarine, and salad and mayonnaise dressings.

Discussing the effect of composition on bacteriological condition, he said that the method of preparation of a food product had to be chosen to give the highest quality of flavour, texture, etc., consistent with a sound bacteriological condition. The two general methods by which the latter might be achieved were heat treatment and suitable control of the composition of the product. When applying either of these methods to a colloidal mixture, it was the aqueous phase that required special attention, as it was only in that phase that bacteria could grow.

The heat treatment adopted for the above purpose might be sufficient to effect sterilisation or only pasteurisation of the product; in the case of colloidal mixtures, heat sterilisation was rarely possible, as the degree of heating necessary was liable to cause complete breakdown of the colloidal system. Normal pasteurisation might have a serious effect on some preparations: in such cases the high-temperature, short-time (H.T.S.T.) heat treatment might be applicable. Other products, such as relatively unstable emulsions, might not withstand even that degree of heating, so recourse was had to a heat treatment of the aqueous phase before emulsification with the remaining ingredients (fatty phase).

For colloidal preparations which were unstable to any heat treatment, there still remained the possibility of making the aqueous phase bactericidal, its composition being such that bacteria would not survive in it.

Keeping Properties

Whichever of the above procedures was adopted, except the one in which a bactericidal aqueous phase was used, the keeping properties of the product would be largely dependent upon the number and type of organisms remaining in the product or introduced by subsequent contamination. It was evident therefore that the more effectively bacterial growth was suppressed in the aqueous phase (by making it bacteriostatic), the less perishable the product would be.

With a knowledge of the bacteriological requirements for satisfactory manufacture of good quality emulsified food preparations, the difficulties which had to be overcome in manufacturing some of the products previously described could be better gauged.

Mayonnaise Manufacture

As an illustration, Dr. Bushill mentioned the intricacies of the manufacture of mayonnaise with a high oil content. Such an emulsion, emulsified with egg yolk, normally broke down if heated. For that reason particular attention had to be paid to the acetic acid (vinegar) content of the aqueous phase. To destroy pathogens, a concentration of approximately 0·5 per cent. acetic acid (or *p*H 4·5) was required in aqueous solution, but for complete suppression of yeasts, moulds, and lactobacilli, a concentration of 3·6 per cent. acetic acid might be necessary. The latter concentration was usually not admissible owing to its effect on flavour; it was possible only in such products as mustard pickles.

In mayonnaise dressings, a compromise was normally adopted by ensuring an acetic acid concentration in the aqueous phase of not less than 1·0-1·5 per cent. This ensured the destruction of pathogens and arrested the development of harmless organisms, but did not necessarily cause their complete destruction. Similar emulsions of lower oil content, such as salad dressings, were more stable, and consequently it was often possible to introduce a heat treatment in addition to the control of the acetic acid content to ensure a prolonged storage life for the product.

Bakers' Buttercream

The suppression of bacterial growth by the careful balancing and treatment of ingredients might also be demonstrated by the preparation and formula of bakers' buttercream, a typical example of which was as follows:

	Per Cent.
Vegetable fats (*e.g.* margarine) ..	32
Sugar	27
Solution of flavouring materials, etc.	14
Marshmallow { sugar 14 per cent. / gelatine 0·5 per cent. / water 12·5 per cent. }	27
Total sugar content	41
Total sugar content (calculated on aqueous phase)	60·8

Manufacture is carried out in two stages. A marshmallow is prepared by dissolving the gelatine in hot water, adding the sugar, and beating the mixture as it cools. The fats, remaining sugar, flavouring, etc., are next beaten together and the marshmallow mixture is then beaten in. In this manner a stiff aerated creamy preparation is made, containing a high percentage of sugar.

In this case heat treatment of the finished product was not prac-

ticable. The fat, sugar, and flavouring ingredients were unlikely sources of pathogenic organisms, such as salmonella. Gelatine, however, although normally of a satisfactory standard if obtained from reputable firms, had been known to be appreciably contaminated with bacteria. For that reason it was desirable that the gelatine should be given a heat treatment during solution in the water, before the sugar was added in the preparation of the marshmallow.

The formula for buttercream given by Dr. Bushill showed a bacteriostatic concentration of sugar of about 60 per cent. in the aqueous phase. Such a concentration suppressed the growth of bacteria; a higher concentration of about 70 per cent. was necessary to prevent the growth of moulds and yeasts. A buttercream of the composition given was therefore safe against bacterial spoilage and against growth of toxin-producing organisms, such as the food poisoning staphylococci; the storage life of the product was limited only by the eventual growth of moulds or yeasts.

Hygiene in Manufacture

The control of the composition of certain of the preparations described was of paramount importance, and whatever precautions were taken during manufacture, hygiene in the subsequent treatment remained an essential feature. This aspect of the subject was discussed in a paper by Mr. M. G. Read, B.Sc., F.R.I.C.

Dealing first with ice cream, he said that there were plenty of regulations to assist and sometimes confuse the would-be ice cream maker. Thus the Ice Cream (Heat Treatment, etc.) Regulations, 1947, and the Ice Cream (Scotland) Regulations, 1948, both gave requirements for the treatment of ice cream. The precaution of requiring that the liquid mixture for manufacture into ice cream was not left at a temperature between 45° F. and 150° F. for more than one hour was necessary to ensure that rapid multiplication of bacteria did not take place. Pasteurisation was called for in these regulations.

It was an important fact that the greater the initial number of bacteria, the less efficient was the pasteurising effect of the heat treatment at 150° F. for thirty minutes, or, alternatively, 160° F. for ten minutes. The result of pasteurising was to destroy most non-sporing bacteria (and this group included most of the pathogenic types, such as salmonella and staphylococci), although J. Patton was quoted as stating that 160° F. for ten minutes was a minimum requirement for the heat treatment for ice cream mixes.

Plant Hygiene

Passing on to plant hygiene, Mr. Read said that the first consideration was thoroughly trained and sufficiently large cleaning staff controlled by a scientifically trained supervisor. This might not be possible for the small man, but in any case the person responsible for the cleaning should understand each step in the process, and it had been suggested that a course of instruction in hygiene should be made available to food manufacturers and traders. Mr. Read gave an outline of the cleaning process, and stressed the advantages of laboratory control.

Tests for Ice Cream

Dealing with the bacteriological examination of ice cream, Mr. Read dwelt on the relative values, from the manufacturer's point of view, of the agar plate count at 37° C., the coliform test, and the methylene blue test. He considered that the best opinion could be formed if the results obtained from all three tests were considered together; in some cases the results must be qualified.

A high count in itself was not necessarily indicative of faulty cleaning or manufacture; for instance, spore-forming organisms may be present, quite harmless themselves, but probably originally present in the raw material and not destroyed by the pasteurisation process.

Certain spore-forming organisms could have an adverse effect on the methylene blue test; thus *Bact. cereus*, a gram-positive sporing rod, in concentrations of 1,000 per ml., could produce a decrease in the methylene blue reduction time of two hours, converting an otherwise grade 1 ice cream into a low grade product solely because of the presence of relatively few and non-significant bacteria.

He advocated that public health authorities should use all three tests and collaborate with the manufacturers themselves in any suspicious circumstances. Mr. Read touched briefly upon the distribution, retailing, and wrapping of ice cream, and discussed vehicles, the cleaning of ice cream servers, and the controversy of wrapped *versus* unwrapped ice cream.

Spray-dried Egg

He next turned to emulsified products such as mayonnaise and salad cream, which were in themselves bacteriologically sterile because no bacterial growth took place provided the acetic acid concentration of the aqueous phase was maintained at the minimum of 3 per cent. According to the Medical Research Council Report, Series No. 260, on *The Bacteriology of Spray-dried Egg*: "No salmonellae were isolated from 18 samples of mayonnaise and salad dressing." This was an experiment where dried egg, known to be contaminated with salmonellae, was used for making the mayonnaise and salad dressing, but this happy state of affairs should not lead the manufacturer to overlook the hygienic aspect.

Synthetic Creams

Mr. Read said that some synthetic creams contained a sufficient concentration of sugar to inhibit the growth of bacteria, while others were ideal breeding grounds. With the latter type it was essential to mix the ingredients together and pasteurise the mixture. These synthetic creams should be prepared with minimum handling by people with a well-developed sense of hygiene and, once made, should be kept in a clean refrigerator until just before use. Products of this type were frequent sources of food poisoning in communal feed-

ing centres, and too great an emphasis could not be laid on the necessity for clean hands, clean instruments, and sufficient refrigeration.

Health and Cleanliness of Employees

Mr. Read stressed the importance of hygiene and the adequacy of arrangements in the factory to ensure this. Speaking of medical examination prior to the appointment of the employee, he asked who was to perform this. Was this to be another burden on the National Health Service? Some of the big manufacturers employed full-time medical officers, but the small man could not afford to do this. While not trying to deride all the excellent suggestions that had been made about medical inspection, he considered that this matter should be kept in its right perspective. Intelligent interrogation of a man on engagement would often give a clue to his past medical history.

Bacteriological Aspects

The bacteriological aspects of the subject were discussed by Dr. Betty C. Hobbs, Ph.D., B.Sc., Dip.Bact. in her paper, which was concerned chiefly with the problem of ice cream and synthetic cream. It had been realised that not only was there danger of contamination of ice cream by staphylococci with subsequent enterotoxin production, but there was also a danger of contamination by carriers of salmonella organisms. Furthermore, batches of dried egg, sometimes used as an ingredient of ice cream, were known to contain small numbers of salmonellae. In 1947, therefore, the Ministry of Food required every manufacturer of ice cream in which dried egg was incorporated to obtain a licence, which was granted only on the understanding that ice cream mix should not be kept at atmospheric temperature for more than an hour before pasteurisation; that it should be subjected to heat treatment comprising exposure to a temperature of not less than 165° F. for at least thirty minutes; and that the mix should be cooled down to 40° F. within half an hour of pasteurisation.

It was realised, however, that the same precautions should be exercised over the preparation of any ice cream, whether containing dried egg or not, if other organisms, notably enterotoxin-producing staphylococci, were not to multiply and cause trouble. Accordingly the Ice Cream (Heat Treatment, etc.) Regulations, 1947, were prepared. They required all ice cream to be thoroughly treated by heat, to be cooled rapidly after heating, and to be kept frozen until sale.

Ice cream made from complete cold mix powder, *i.e.* a powder prepared by evaporating down a liquid mix which had been subjected to heat treatment and which required only the addition of water to make ice cream, need not be heat treated, but must be frozen within a hour of reconstitution.

Since these Heat Treatment Regulations had come into force, only a few minor outbreaks of food poisoning from ice cream had been reported.

Dangers of Synthetic Cream

The history of synthetic cream was different. In some boroughs, local bye-laws required the pasteurisation of the mixed ingredients of synthetic cream, and the use of dried egg was permitted only under licence, which prescribed that any dried egg product must first be reconstituted and pasteurised at 170° F. for fifteen minutes, and that within one hour of this pasteurisation the egg product should be mixed with the other ingredients and heated to 165° F. for thirty minutes. After the second pasteurisation, the whole mix should be cooled to 40° F. or less within half an hour and should be held at this temperature.

It was probable that these regulations were ignored by most of the trade, because the first recommendation, that of heating the reconstituted egg to 170° F. for fifteen minutes, was impracticable, as the egg would be coagulated. Pasteurisation of the mixed ingredients was probably carried out by large manufacturers only.

There must be a vast number of small bakeries where the cream was made up and handled with scant attention to principles of hygiene. The dangers arising from the contamination of synthetic cream were far greater than for ice cream, which was kept frozen and handled comparatively little.

Sampling and Examination

There were two points to be considered relating to the significance and aim of bacteriological control. Dr. Hobbs proceeded to describe methods of sampling and of examination of the products. She mentioned that a satisfactory bacteriological method for the examination of synthetic cream had yet to be devised. In the meantime, the most that could be done was to use the general methods carried out for the bacteriological examination of foodstuffs suspected to have caused food poisoning. These included (*a*) general appearance and smell; (*b*) *p*H; (*c*) direct microscopic smear; (*d*) plate count; (*e*) coliform count; (*f*) aerobic cultures—direct and enrichment; and (*g*) anaerobic cultures—direct and enrichment.

She pointed out that the plate count might bear little relation to the hygienic quality of the cream; and the same objection applied to the coliform test in synthetic cream, namely, that as coliform organisms were able to multiply abundantly in this product, the numbers present at the time of examination might bear little relation to the extent of the original contamination or to the numbers of accompanying pathogenic organisms. The only significant examination, therefore, was by enrichment methods and selective media for the presence of pathogenic organisms.

Dr. Hobbs concluded her interesting paper by giving some tabulated data on the results of ice cream grading.

TO AUTHORS

Food Manufacture is prepared to consider the publication of any books on scientific and technical subjects which authors might care to submit.

Australia – Britain's Vineyard

It is a popular idea in Britain that wine production in Australia is a comparatively recent development, but its beginnings may be traced back to the earliest colonial days. Vines taken to Australia in 1788 were replaced by comprehensive collections of grape cuttings from Europe, the descendants of which, in many cases, are still producing wines of character. Repeated and systematic plantings, the evolution of sound and modern production methods, and the British public's enthusiastic reception of Australian wines have combined to encourage the development, especially during the past fifty years, of a vast and varied industry which is now confronted, and partially paralysed, by the cul-de-sac conditions imposed by heavy British customs duties.

FOLLOWING upon awards made for Australian wines at the Bordeaux exhibition in 1873, *Le Moniteur Vinconti* stated: "If Australia were not too remote to become for a long time an exporting land for wine, its competition would alarm us. We fear that prejudice may operate as much as distance against the progress of Australian wines in competition with those of France and other European countries."

For many years this forecast proved accurate; nevertheless, a growing trade in dry or beverage wines did develop up to 1924. Until then, with no preference in tariff, Australia was unable to export fortified wines in competition with European countries. The higher Australian production costs and wage levels, and the burden of cask-wood costs and shipping for the 14,000 mile voyage were finally offset in 1925 when the system of Imperial Preference gave Australian fortified wines a chance to compete with Britain's continental neighbours.

The effects were instantaneous —Australian wines became popular in Britain as modestly priced wines of a consistently high quality. By 1939 Australia was exporting to the U.K. 3·7 million gallons of wine per year—four-fifths of her total wine exports, Portugal alone heading her as a shipper of wines to Britain with a quantity only slightly greater.

The majority of wines are of the sweet, full-bodied type of a con-

Penfold's Vinery at Nuriootpa, South Australia.

Grape pickers at Rutherglen, Victoria.

sistently clean quality, since the absence of summer rains gives almost total immunity from mildew and kindred diseases. Most of the vineyards are situated in the warmer, low altitude areas, but some are found in the higher and cooler districts where delicate dry white and red wines are grown.

Adaptability of the Vine

The vine itself is a remarkably adaptable plant and will withstand a wide range of climatic and geological conditions, but the world's major vineyard areas are usually found within a definite band in both the Northern and Southern Hemispheres. In the north the chief vineyards exist between 35 degrees north—representing the line through Algeria and California—and 50 degrees at the Champagne area.

The most famous Australian vineyards are found between the same degrees of latitude south, from southern Queensland in the north to Victoria and South Australia in the south, and with the vineyard areas of New South Wales lying between these limits. From the Hunter River District of New South Wales come many of the finest dry white wines of Australia, from vines grown mainly in the valleys where the soils are deep and sandy and where the vineyards are sheltered by surrounding hills.

The varieties most commonly grown for white wines are the Semillon, Verdho, Ugni Blanc, White Hermitage, and to a lesser extent Clairette. In other parts of this district the soils are of a volcanic origin, weathered from ancient rock, and are particularly suitable for the production of red wines. Of these varieties the Syrah, commonly called Shiraz or Hermitage, forms the bulk of the plantation, while the Cabernet Sauvignon is used to a certain extent because of the quality it confers on dry red wines. Some Pinot, of both the black and red varieties, is cultivated.

Vintage usually commences in Australia early in February and lasts for about five or six weeks. The grapes are gathered by pickers and transferred to vehicles for cartage to the factory, where stemming is the first operation, the berries being separated from the stalks, crushed, and then conveyed to fermenting vats. Pure cultures of yeast are used to ensure clean fermentation, after which the young wine is pumped to the storage casks.

Concrete tanks, lined with paraffin wax, are used for fermentation.

For the making of white wines the juice is drained immediately after crushing and is fermented apart from the skins in order to eliminate colour and skin-contributed characteristics. Red wines are fermented on the skins in order to produce the required density of colour.

Other Wine Producing Areas

Since this New South Wales district has never been ravaged by phylloxera, many of the original vines are still growing upon their own stocks, some of them over seventy-five years old. The Hunter River wines, although light in alcohol, are soft and round, giving a false indication of body because they lack the high natural acidity of unbalanced fruit.

The Minchinbury vineyards, comprising some 250 acres of vines planted with red and white varieties, constitute one of the most famous wine cellars in New South Wales. Lying in well-drained, undulating land, this vineyard, with its up-to-date winery, is one of the most attractive in Australia. The soil is ideal for the growth of light wines, and many of the finest white varieties are grown, ensuring that Minchinbury wines are of a very high standard, admirably suited to the production of sparkling wines.

This vineyard now supplies the greatest part of Australia's champagnes and many of its best dry white wines. On the other hand, the Hermitage, Alicante Bouchet, Cabernet Sauvignon, Pinot, and Durif varieties produce dry red wines of a character especially adaptable to Sparkling Burgundies.

Four hundred miles south-east of Sydney, in the region of the River Murray, the Corowa-Albury district takes in a large tract of

country where rainfall and humidity are lower than in other New South Wales vineyard areas, but in which the summer temperatures are still consistently high. These climatic conditions, combined with the particular type of soil, make this portion of the State particularly suitable for the growth of rich sweet wines, some of which have shown a considerable degree of similarity to those of the Duoro.

With careful vintaging and given maturity, the wines of Corowa are distinguished for their softness and quality. Further south, several extensive wine-growing districts are found in the centre of one of the oldest and richest gold-producing areas of the country.

The major Victorian wine districts, Wahgunyah and Rutherglen, were badly affected by phylloxera in 1899 and had to be replanted with phylloxera-resistant stocks. The Rutherglen district now produces particularly rich and luscious sweet wines which, if the grapes are allowed to reach high maturity, are rather in the nature of a liqueur.

In addition to these red types, this same district produces other exceptionally fine sweet wines which always command high prices for the Australian trade.

A section of the Penfold cellars where wines are stored ready for bottling.

For many years the Great Western District, on the overland route between Melbourne and Adelaide, has been associated with the wine industry through the efforts of the late Hans Irvine, who established the vineyards known as "Great Western." He was one of the first to undertake the manufacture of sparkling wines, and for the purpose built an extensive system of vaults for storage and maturing.

Some of the millions of bottles of champagne in the Penfold cellars.

In South Australia, the areas under vines are far more extensive than in any other State. These vineyards have not been ravaged by vine diseases, and for many years the vignerons of this State have voluntarily taxed themselves to build a fund for mutual defence against a possible outbreak.

In the Central District of South Australia, on the slopes of the Mount Lofty Range, perfect grapes are grown. Natural rainfall is ample for the vine's requirements, and soil conditions have encouraged the planting of extensive and luscious vine, olive, and almond plantations flanked by groves of oranges, peaches, and apricots.

The wine of this district may be dry or sweet, according to the actual locality, the type of grape grown, and the period at which the fruit is gathered. However, since the usual summer climate is fairly hot and dry, the greater part of the grapes is used for making sweet wines. The soils generally are well drained, of a clay loam consistency, and in some cases mixed with shaly rock. The varieties mostly grown are the Shiraz, Grenache, Frontignac, Pedro Ximenes, Muscatel, Riesling, Cabernet, and some Sweet Hermitage.

In South Australia's southern district, one of the country's earli-

est vineyards was set out by John Reynell in 1838, and is now incorporated in the famous Reynella vineyards. This southern country produces a considerable variety of fine light wines, many of which have high reputations on the British market, while other parts are famed for their full-bodied dry wines. The district has a good rainfall although the summer is fairly dry, and it is therefore possible to include sweet wines of high quality in the vintage by allowing the grapes to remain longer upon the vines. A good deal of the land has an underlying subsoil of limestone or marl, which is conducive to high percentages of sugar in the fruit for the production of sweet wines. The varieties generally grown are Shiraz, Mataro, Grenache, Riesling, and Pedro Ximenes. Further back into the steeper hills, the Rhine Riesling is grown with success and yields fine light wines of special distinction.

Port Type Wines

In the northern areas of South Australia, the weather and soil conditions combine to produce many of the finest port type wines made in Australia. Probably the most famous winery in the district, and one of the best known in Australia, is Seppeltsfield, established over eighty years ago. Seppeltsfield is one of the largest individual wineries in the world, handling thousands of tons of grapes each vintage season with modern plant of the very highest standard.

At vintage time the huge loads of grapes are transported by motor lorry from many of the smaller private vineyards to the local grape-buying wineries where they are classified and processed. Vignerons do not make their own wines as in many European countries, but sell their grapes in sorted lots to the local wineries, many of which are co-operative ventures and communally owned. In addition to producing high general standard wines under uniformly modern conditions and according to all the ancient arts of the vint-

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ner, the wineries are also sufficiently numerous to ensure a constantly wide variety of wines and avoid the dangers of over-standardisation.

Considerable developments of the wine industry have occurred in Western Australia, but, as in the rest of Australia, it is relatively small compared with the scope of the country. The vine is successfully grown and good quality wines produced on many small vineyards, but most of it is sold locally. These small vineyards, within a short distance of Perth, also produce fine table grapes, currants, and raisins. The greater part of Queensland is too close to the tropics to be of any use for viticulture. Development in southern Queensland will probably come with an expanded home and overseas market, but South Australia will undoubtedly remain the greatest and richest of Australia's wine-growing States.

Photos The Australian Wine Information Centre.

A Treatise on Starch

ACTIVITY in the field of starch chemistry and technology has been intense in the last five or six years. The first edition of Dr. Ralph Kerr's book* which appeared in 1944 was an important contribution to the literature on starch. As no book of major importance on this subject has appeared since that time, the publication of a greatly enlarged and extensively revised edition of Kerr's volume is to be welcomed.

Valuable additions to the original book have been the very full rewriting of the chapter on the manufacture of corn starch; an additional chapter on the miscellaneous uses of starch; and discussions of analytical methods used, in some cases specifically, for starch or starch products and of the many methods for characterising the physical properties of starch, such as its colloidal properties, viscosity in solution, paste formation, and mobility of powder.

* *Chemistry and Industry of Starch*. Second edition, revised and enlarged. Edited by Ralph W. Kerr, Ph.D. Pp. 719+xii. Academic Press, Inc., New York. Price 86s.

Divided into five sections, which are subdivided into 156 chapters on specific subjects, the book covers in detail the occurrence and varieties of starch, and the manufacture of maize, modified maize, tapioca, arrowroot, wheat, potato, and other industrial starches. The section dealing with the evaluation of modified starches in practice is particularly valuable from the users' point of view, and for manufacturers wishing to match samples. Chapters follow on the physical and the chemical properties of starch; the hydrogen bond in starch; derivatives such as ethers and esters; oxidation; dextrinisation; manufacture of dextrins; acid hydrolysis; properties and production of amylases; and the modification of starch by enzymes and miscellaneous reactions.

The final section of the book contains chapters on the use of starch in the paper, fermentation, food, textile, and adhesive industries and in other fields, and, finally, the methods of chemical analysis and physical examination.

G. V. Caesar, L. M. Christensen, E. F. Degering, D. French, A. Frieden, E. Kneen, J. M. Newton, G. Peckham, Jr., and G. M. Severson are all well-known names to those concerned with the chemistry and technology of starch and cereal products, and Dr. Ralph Kerr has had their valuable support in the production of this book.

There is very little about starch, its chemistry, uses, and technology, which is not touched upon, and even if the required information is not specifically given, references to the literature are supplied in profusion. Although fuller reference might have been made to European and British work, there is no doubt but that American work and practice have been treated in an exhaustive and comprehensive manner.

Accompanying the high standard of presentation and the wealth of information are the excellence of the proof reading and the high-class production of the book. Although the price may appear somewhat high, the book is extremely good value for the money.—J. A. R.

News from the Industry

FORTHCOMING EVENTS

World Canning Congress

The following arrangements have now been announced for the second International Congress for Canned Foods, organised by the *Comité International Permanent de la Conserve*, to be held in Paris from October 16 to 19, 1951:

Tuesday, October 16.

Morning—Opening of the Congress by the President, Monsieur R. V. Manaut; speech by a French Government Minister; and details of the organisation of the Congress by the Secretary-General.

Afternoon—Papers will be read by (1) Dr. A. G. van Veen (Acting Director, Nutrition Division, F.A.O.) on "The Importance of Canned Foods in World Nutrition"; (2) Dr. C. G. King (Scientific Director, The Nutrition Foundation, U.S.A.) on "The Nutritive Value of Canned Foods; a Digest of Recent Work in the U.S.A."; and (3) by M. Fontaine (Professor of Physiology, Museum of Natural History, France) on "The Digestibility of Canned Foods."

Wednesday, October 17.

Morning—Short reports on technical progress in canned foods will be presented as follows: (1) "Fish," by M. M. Jul (Chief Technologist, Fisheries Division, F.A.O.); (2) "Meat," by Dr. J. P. L. Van der Steur (Chemical Department, Lever Bros. and Unilever, Ltd., Holland).

Afternoon—(3) "Vegetables," by M. J. Durocher (Director, National Institute of Canned Foods, France); (4) "Fruits," by Mr. F. Hirst (Director, Fruit and Vegetables Preservation Research Station, Great Britain), or Mr. W. B. Adam.

Thursday, October 18.

Morning—The following papers will be read: "Aspects of the U.S. Legislation affecting Canned Foods," by Mr. Charles W. Dunn (President, Food Law Institute, Nutrition Foundation, U.S.A.); "Comparison of Legislation in Different Countries," by Mr. C. L. Hinton (British Food Manufacturing Industries Research Association, Great Britain).

Afternoon—Economic Section: Cost comparisons of canned and fresh products—

(*a*) in the U.S.A. Name to be announced.

(*b*) in France, by M. Jumel (Technical Adviser, *Conseil Supérieur de la Conserve*, France).

(*c*) in Sweden, by M. G. Borgstrom (Director, Swedish Institute for Canned Foods Research).

(*d*) in Denmark, by M. F. Bramsnaes (Director, Fish Industries Research Laboratory, Denmark).

(*e*) in Belgium, by M. G. Morel, (President, Fish Industries Association, Belgium).

Scientific Section: "Bacteriology of Semi-conserves," by Mlle. Aschehoug (Head of Bacteriology Canning Industry Laboratory, Stavanger, Norway) and M. Henri Cheftel (Director of the Research Laboratory of *J. J. Carnaud et Forges de Basse-Indre*); "Non-enzymatic Browning," by Dr. C. H. Lea (Low Temperature Research Station, Great Britain).

Friday, October 19.

Morning—"Tinplate," by E. S. Hedges (Director of the Tin Research Institute, Great Britain).

"Cans," by F. Jacobsen (Director, Research Department, *Platmanufactur*, Sweden).

"Standardisation of Cans," by G. Weston (Technical Director, British Standards Institution, Great Britain).

Afternoon—Report of the *Comité International Permanent de la Conserve*.

"The Past, Present, and Future of the C.I.P.C.," by the President, Monsieur R. V. Manaut.

"The Work of the C.I.P.C.," by M. Henri Cheftel (President of the Scientific Committee) and M. P. Peissi (Secretary-General of the C.I.P.C.).

Resolutions and recommendations of the Congress.

■

A Century's Development

Products representative of all the company's activities in security printing, stationery, plastics, and the gas industry will be on view at a private exhibition to be held during July at the galleries of the Royal Society of Painters in Water Colours, Conduit Street, London, W.1, by Thomas de la Rue and Co.

Exhibits of historical interest from the company's own museum will help to tell the story of development from early Victorian times, and among the articles shown will be several which were on display at the Great Exhibition of 1851, when the business had already been in existence for nearly forty years.

The security division will be open to visitors from July 2 to 4, and the industrial division, which will be represented by examples of the company's work in laminated and extruded plastics and gas appliances, from July 5 to 19.

Royal Sanitary Institute

The Council of The Royal Sanitary Institute have arranged to hold a conference on the Report of the Catering Trade Working Party on Hygiene in Catering Establishments. This will be held under the chairmanship of Sir Weldon Dalrymple-Champneys, Bt., M.A., D.M., F.R.C.P. (Vice-President) at the Institute, 90, Buckingham Palace Road, London, S.W.1, on July 18. The following is the programme:

Morning Session, 11 *a.m.*

(*a*) Address by Sir William Savage, M.D., D.P.H., chairman of the Catering Trade Working Party, on the aims and recommendations of the Report.

(*b*) Paper by Prof. G. S. Wilson, M.D., F.R.C.P., D.P.H., Director, Public Health Laboratory Service.

Afternoon Session, 2 *p.m.*

(*a*) Paper by Capt. Kenneth C. McCallum, M.C., Managing Director, Trust Houses, Ltd.

(*b*) Paper by Dr. W. R. Martine, O.B.E., T.D., Senior Assistant Medical Officer of Health, Birmingham.

(*c*) General discussion.

The following meetings have also been arranged:

Swansea Sessional Meeting, June 1, at 10 a.m. in the Guildhall, Swansea. Papers on "Problems in Port Health Administration," by Dr. E. B. Meyrick, Medical Officer of Health, Swansea, and "Swansea Main Drainage Scheme," by D. J. Milford Davies, A.M.I.Mun.E., Deputy Borough Engineer and Surveyor, Swansea. In the afternoon there will be visits to Mumbles Head Outfall Works, homes for the aged which are at present being converted and adapted, the Penlan housing estate, the Swansea trading estate, and new roads in the reconstruction area.

Sheffield Sessional Meeting, June 8, at 10 a.m. in the Memorial Hall, Barkers Pool, Sheffield. Papers on "A Survey of the Problem of Smoke Abatement in Low Temperature Furnaces," by R. J. Sarjant, O.B.E., D.Sc., A.R.C.Sc., D.I.C., F.Inst.F., F.I.M., Professor of Fuel Technology, University of Sheffield, and on "Problems Arising from the Treatment and Distribution of Milk," by G. A. Knowles, Superintendent Food Inspector, Sheffield. The afternoon will be devoted to visits to the food preparation factory of Arthur Davy and Sons, Ltd., of Sheffield; the flour mills of Joshua Wigfull and Sons, Ltd., of Sheffield; the suggested health centre at Firth Park; the Public Health

Laboratory, City General Hospital; and the Department of Fuel Technology, University of Sheffield, to see some of the experiments that are being undertaken for the suppression of smoke.

London Sessional Meeting, June 13, at 2.30 p.m. at the Institute. Discussion on "Planning for the Care of the Aged and the Chronic Sick," to be opened by D. A. Goldfinch, Dip.T.P.(Leeds), F.R.I.B.A., architect to the Birmingham Regional Hospital Board.

Armagh Sessional Meeting, June 16, at 10 a.m. in Minor City Hall, Armagh, Northern Ireland. Joint meeting with the Northern Ireland Branch of the Society of Medical Officers of Health. Papers on "The Housing Problem from the Medical Point of View," by Dr. John McLaughlin, Divisional Medical Officer, County Antrim; "Procedure under the Planning and Housing Act (N.I.) 1931," by Mr. W. E. Weir, Deputy County Sanitary Officer, Armagh; and "Rural Housing with Special Reference to Sewage Disposal," by Mr. K. H. Lynas, Sanitary Officer of the Ministry of Health and Local Government (N.I.). A visit to the C.W.S. Condensery, Tullygoonigan, will be made in the afternoon.

Colwyn Bay Sessional Meeting, July 6, at 10 a.m. in the Town Hall, Colwyn Bay. Papers on "Co-operation between the Various Services—Hospital Board and Local Authorities—in the Promotion of Health," by Dr. D. J. A. Alban Jones, Administrative Medical Officer for Welsh Regional Hospital Board (North Wales Area), and "The Prevention of Food Poisoning," by Dr. D. E. Parry Pritchard, County Medical Officer, Caernarvonshire. In the afternoon there will be a visit to J. K. Smit and Sons, diamond tools.

Beverley Sessional Meeting, July 12, at 10 a.m. in the Art Gallery, Beverley Library. Papers on "Human Problems in the Tanning Industry," by Dr. E. H. Thierry, Industrial Medical Officer, and "Contagious Disease in Animals," by P. D. Dunn, M.R.C.V.S., F.Z.S., veterinary surgeon, Beverley. Visits will be paid to the tannery of Richard Hodgson and Sons and Beverley Minster in the afternoon.

Lighting in a Flour Mill

During the reconstruction of the No. 3 mill of Paul Brothers of Birkenhead, Metrovick illuminating engineers were called in by the consulting engineers to advise on the new lighting arrangements.

One side of the mill is adjacent to another tall building which makes artificial lighting necessary in one half of the mill throughout the whole twenty-four hours for six days per week, and low running costs and a minimum of maintenance were, therefore, important considerations in the selection of the lighting equipment.

The whole area of operations must be seen on each floor, and light is also necessary on the tops of conveyors placed just under the ceiling. In addition, the operators require adequate illumination with good colour rendering to see the flour and progress of stocks through the glass apertures in the wooden ducts.

Numerous overhead shafts and individual driving belts to the machines had to be taken into account in the choice and positioning of the lighting equipment.

It was finally decided that Metrovick 2 tube cold cathode fittings would be most suitable. These have an effective low brightness source 8 ft. long which reduces shadows and tends to minimise the specular reflections on the numerous inspection panels.

One hundred and sixty-two 2 lamp daylight units are used, each tube being rated at 75 W.

Kent Factory for Health Foods

To meet the increasing demand for their products for which the productive facilities of the existing three factories in Willesden are insufficient, The Energen Foods Company have purchased the freehold of a factory at Ashford, Kent.

Installation of the latest plant and machinery is now in progress, and it is hoped to start operations in July. In the first instance a complete unit for the production of rolls will be installed and its output capacity will be almost as great as that of the three factories at Willesden. Other foods will be produced at Ashford as soon as conditions permit; this will necessitate large scale extensions of the present buildings.

The company have recently issued a fifth edition of *The Energen Book*, brought up to date in consultation with the medical advisers of the company's dietary service. This gives suggested dietaries, recipes, and tables of food values.

Promoting Food Exports to Canada

Mr. Clifford B. Powell, President of Powell and Co. (Montreal), and chairman of the Processed Foods Division of the Dollar Sterling Trades Advisory Council, the Canadian counterpart organisation of the Dollar Exports Board, recently paid a second visit to Great Britain to continue the work of promoting the importation of British foodstuffs to Canada. During this trip, apart from discussions with officials of the Ministry of Food and Board of Trade, Mr. Powell addressed a gathering at the recent Dollar Convention at Eastbourne, and held meetings at the Dollar Exports Board's offices with food and drink manufacturers' associations and individual firms to discuss the problems and possibilities of marketing British foodstuffs in Canada.

The Canadian Council has, since its inception, made a national campaign through the Canadian press and radio to gain the co-operation of consumers and commercial interests in diverting a percentage of Canada's purchasers from dollar to sterling areas. The members of the Council have carried out a survey of the largest capital projects, both in being and contemplated, with the object of allowing British producers the opportunity of quoting for the supply of materials and equipment.

As regards foodstuffs, Mr. Powell has written personally to nearly 1,000 distributors in Canada, and the replies indicate that there is an immense goodwill existing in Canada for British goods. Before this visit, he also made a trip through Canada, and his observations are that British exporters should improve their knowledge of the Canadian market, and devote more attention to continuity of supply, deliveries, competition, and advertising.

Twin Cylinder Drying Machines

Designed for evaporating the liquids and reclaiming the solids from a wide variety of substances, twin cylinder drying machines are extensively used for the production of milk and whey powders, and proprietary baby foods. The manufacturers, Bertrams Limited, have supplied machines to all the Milk Marketing Boards and principal creameries at home and abroad as well as to leading chocolate manufacturers.

The machines are used in the manufacture of meat extracts and breakfast cereals, and the chemical industry make use of them for colours and dyes as well as for a wide range of chemical compounds. Further applications are in the manufacture of Epsom and Glauber salts, soap powder, and vegetable gums.

Each machine comprises two steam-heated drying cylinders revolving in unison. The liquid is fed to the upper valley or trough formed by the peripheries of the cylinders, the ends being closed by plates or dams. A film of the liquid is deposited on and adheres to each of the cylinders, and is dried before the cylinder makes a complete revolution, when it meets a steel doctor or scraper and falls into a suitable bin or conveyor.

The machines are made in four sizes to deal with from 75 to 300 gallons of liquid per hour. In addition, a model machine is manufactured for laboratory use or where the quantities required are small.

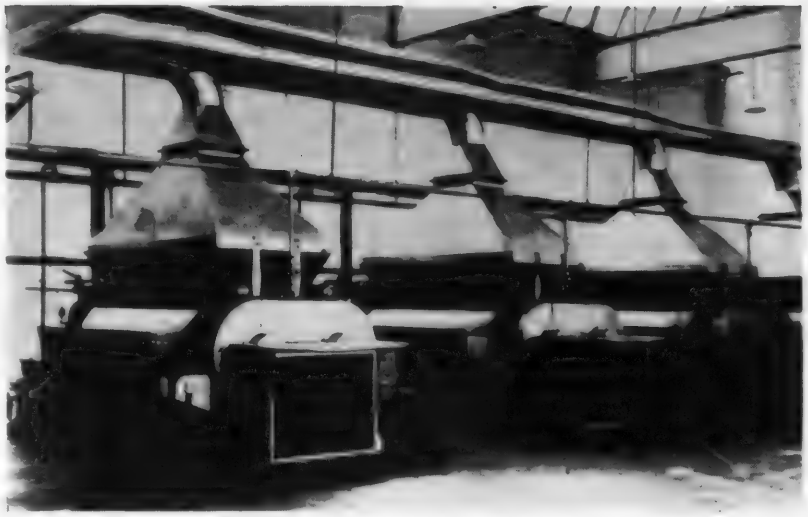
The makers have such a machine in their own laboratory and carry out tests on prospective customers' own substances, submitting a report on the suitability of the machine to handle these, and tabulating the results which have been obtained.

R.S.A. Prize for Food Ideas

In July, 1950, the Royal Society of Arts, as part of its celebrations of the centenary of the Great Exhibition of 1851, which it originated, and as a constructive effort to assist the nation in its present difficulties, offered a prize of £500 and a gold medal for "a means of promoting the production or the economic utilisation of food in Britain."

The Council of the Society has now awarded the prize to R. E. Slade, M.C., D.Sc., F.R.I.C., who submitted a scheme for two systems of farming, one for grassland and the other for arable land. Dr. Slade, a chemist by profession, is now a farmer; he was Controller of Research, Imperial Chemical Industries, from 1935 to 1945. A silver medal was also awarded to the runner-up, R. M. Paterson, for his simple system of grassland recording.

Presentation of the prize and the medals was made by H.R.H. Princess Elizabeth, President of the Society.



Twin cylinder drying machines installed in the Glaxo factory.

Hygienic Buckets

With the body produced from a single-piece spinning and the top edge turned out to provide ample strength for constant handling, the stainless steel buckets manufactured by A. Johnson and Co. (London) have considerable application in the food and allied industries.

There are two types available, one having a new design of skirt band, which combines strength and cleanliness, and the other having no skirt band. The $\frac{5}{8}$ in. diameter rod type handle is attached to the mating lug in such a way as to eliminate all possibility of crevices, and each bucket is highly polished both inside and out.

The handle of the stainless steel bucket is attached so as to eliminate all possibility of crevices.

Summer Train Services

Further improvements in British Railways passenger services this summer, including the acceleration of over 130 trains by ten minutes or more and the introduction of twenty-three new cross-country services providing for weekend travel between industrial centres and holiday resorts, were recently announced by Mr. John Elliot, chairman of the Railway Executive.

The summer schedules this year will operate from June 18 until September 23. There will be many new services on main line routes, and a number of pre-war services will be restored for the first time. Special late trains will be run from London to Kent and the south coast during the Festival of Britain.

An entirely new "Golden Arrow" train is being built for the day service between London and Paris. The stock of this train will consist of new Pullman cars throughout embodying the latest ideas in interior decoration and also providing a new Trianon bar.

The number of restaurant car services to be provided in conjunction with the Hotels Executive will be about the same as last year, but there will be 110 more buffet car services each week and sixteen more trains with Pullman cars. Twelve additional sleeping car services will be run each week, and there will be improvements in several shipping services.

Altogether some 42,000 carriages will be available to operate the holiday, suburban, and other services, giving, for the first time since the war, the same number of seats as in 1939.

By June 18, some 240 of the new standard carriages, as well as ten new standard kitchen cars (the largest yet built on British Railways) will be in service, as well as about thirty new locomotives.

Machinery Manufacturers Meet

CO-OPERATION WITH GOVERNMENT URGED

The friendly atmosphere which prevailed among food machinery manufacturers, representatives of Government Departments and of various Trade Associations, and members of the technical press at the Food Machinery Association annual luncheon at the Trocadero Restaurant was described by Mr. Michael Stewart, M.P., Parliamentary Secretary, Ministry of Supply, as "symbolic of the co-operation which the chairman of the Association has stressed as the greatest need of the present time."

Speaking of the export trade, the chairman, Mr. A. P. L. Blaxter, emphasised that, while certain markets were more desirable than others in the view of the Government, the relative importance of these markets changed so frequently that it was almost impossible for machinery manufacturers to keep pace with developments. The products of this particular industry were not capable of being switched rapidly from one country to another. There were markets that might not appeal so much to the Government from the point of view of currency, but which, from the long term point of view, the industry dare not give up.

There was, he said, hardly an article of food in Great Britain which was not handled by the products of the Association's members. The industry made a considerable contribution in bringing in hard currency, but the success of their continued efforts must depend on an adequate supply of raw materials, and it was in this respect that their relationship with the Ministries was of importance. Today the Ministry of Supply had a difficult task to maintain the balance between the rearmament programme and the demands of civilian production, and there was only one way in which this could be done—by maintaining full co-operation between the Government and industry.

In responding to the toast of "The Guests," Mr. Stewart said that many people had little conception of the work done to ensure that the food presented to them was efficiently prepared, attractive, and clean. In this way the industry had made a contribution to the production and economy of the country. Few people realised that the industry had a production valued at some £40 million a year and that its exports amounted to a value of some £12 million. Particular difficulty had been experienced in the field of dollar exports owing to the high standard of development in the U.S.A., but nevertheless notable contributions were forthcoming, particularly from those firms making biscuit machinery, dairy equipment, and grain milling machinery. The figures he had quoted showed that, while those who worked in the industry had had to face many vexations and difficulties, they had not allowed these to add up to the frustration stage.

The Government had already broadly outlined the way in which they proposed to deal with the question of raw materials at a time when they had to face the necessity of increased rearmament; they fully realised that decisions on such a matter must be taken in full consultation with all those who would be affected by them.

Mr. Stewart concluded by thanking the Association for the goodwill which they had always shown in their dealings with the Government.

Chicken Noodle Soup Innovation

A step forward in the production of chicken noodle soup is marked by the inclusion of pure chicken fat, enclosed in an edible gelatin capsule, in each packet.

By this method, which has been introduced by the Three Cooks company, the fat is completely sealed against deterioration and loss of flavour.

The other ingredients of the firm's soup are seasonings and egg noodles. These, together with the capsule, are added to hot water and simmered for seven minutes. The capsule rapidly dissolves, releasing the chicken fat and producing soup with a fine flavour and consistency.

New Sandwich Spread Pack

An attractive new pack of sandwich spread has recently been put on the market by Crosse and Blackwell.

London Commerce in 1950

Consisting of 130 pages with over a hundred main headings in the list of contents, the sixty-ninth annual report of the London Chamber of Commerce illustrates its close concern with the commerce of the world.

The Chamber has followed a policy of encouraging overseas business men to seek its assistance and for many years has given honorary membership for a period of up to three months to members of British Chambers overseas coming to London, provided they hold temporary membership cards issued by the secretaries of their own Chambers.

About 450 enquiries came into the Chamber each working day last year —the greater part to the Customs and Regulations and Statistics and Enquiries Departments. The number of Certificates of Origin issued on the authority of foreign and commonwealth governments was 144,000, compared with 95,000 in 1949. Five meetings were held in the Chamber on each working day, and accommodation is provided in the Chamber's building—usually with secretarial services—for 103 affiliated, allied, and other associations. In the period under review, the Commercial Education Department examined 46,000 candidates under the Chamber's scheme; details are given of the business scholarships provided by the Charles R. E. Bell Fund to enable young people to improve their equipment for business life.

Activities during the year covered subjects as diverse as the grading of chillies in East Africa, German competition, Anglo-Indonesian trade, trading methods of the Chinese Government, Japanese competition in East Africa, resumption of London tea auctions, and the Customs policy in West Africa.

Exhibition of Pictures

A second exhibition of pictures, showing a varied collection in many types of media, all of which were suitable for reproduction within their own range of products, was held recently by The Metal Box Company at the Grand Hotel, Manchester.

The collection included pictures by members of the company's own art studios, and a few by well-known artists. Also on display were a selection of black and white photographs and a whole section devoted entirely to direct colour photography—a product of the company's colour photographic studios at Totteridge, near London.

Other exhibits showed the progressive stages of colour printing on metal and the application of works of art as decoration for packages, advertising material, and trays.

Obituary

Mr. C. B. Gunstone, director of William Gunstone and Sons, food and biscuit manufacturers of Sheffield, at the age of 45.

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Mr. Gilbert P. Lewis, sales manager of the Morton Machine Co., on April 22.

▪

Mr. John Latham, the founder of Latham and Co., manufacturers of Cakeoma and allied products, at the age of 91.

Mr. Latham started business in a small factory in Tuebrook, Liverpool, in 1884 and from this built up a large business with factories in London and Liverpool. He laid the foundation stone of the new factory at Bromborough Port, Cheshire, in 1949.

He was governing director of the company up to 1944 and remained an active director until March, 1950.

Mobile Engineering Exhibition

In order to keep engineers informed of the latest developments in the design and manufacture of engineering products, the Ellison Organisation have devised a means of taking an exhibition stand to the doorstep of any factory where it can be of help. It takes the form of a motor-driven vehicle, 27 ft. 6 in. long by 7 ft. 6 in. wide, and about 11 ft. high, in which is incorporated a complete exhibition room, with fluorescent lighting, thermostatically controlled heater, and ventilation by small exhaust fans in the roof.

Exhibits consist in turn of a comprehensive display of Tufnol machined and moulded components, switchgear, hydraulic valves, or grey iron castings, varying according to whichever of the associated companies is exhibiting. Interchangeable nameplates on the exterior of the vehicle bear the name of the exhibitors. There is seating accommodation, a desk, library of literature and photographs, dictating machine, and radio. When Tufnol use the vehicle, a small lathe will be fitted so that the machining of the product may be practically demonstrated.

Other features are a cocktail cabinet, refrigerator, wash basin, and a system of loud speaker radio intercommunication with the driver's cabin. The carpeted floor can be cleaned with attachments fitted to a suction device concealed beneath the floor boards. When the lathe is in use, the swarf and dust are dissipated by this means.

The driver's cabin is specially designed to reduce fatigue on long journeys. The fittings include an adjustable, upholstered, armchair-type seat, an all-round vision windscreen that can be opened when required, controlled heating and ventilating arrangements, radio, fog, and pass lights, and radiator shutters controlled from the cabin. There is also a movable mirror operated by a lever near to the driver which allows him to view all parts of the room.

Interior of the mobile exhibition.

To give the greatest possible help to the rearmament and export drives, it is proposed to use the mobile exhibition for Tufnol only during the next twelve months, commencing with a tour of the Birmingham and district area. Next year, Ellison switchgear will be displayed.

Department Store Bakery

Owing to enemy action during the war, the building of Lewis's Stores in Liverpool was practically gutted, and the two 8 ft. by 6 ft. electric ovens, installed on the top floor bakery, were destroyed. As an emer-emergency measure a G.E.C. double deck electric oven of the same size was installed in a temporary bakehouse alongside two solid fuel fired ovens. Thermostatic control was specified for top and bottom heating of each deck, as it was considered that this form of control was not only more economical but would also provide facilities for easier and better baking of a variety of products. This belief was confirmed by the results obtained and two further thermostacially controlled ovens were later installed in Lewis's Manchester store.

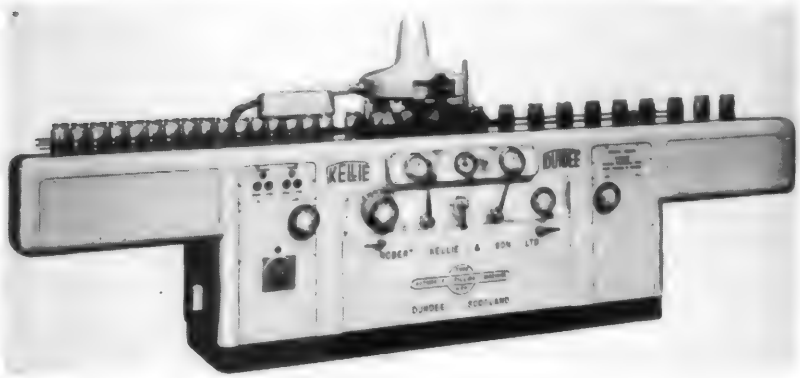
In 1950, a new bakery was fitted out in the company's new Liverpool stores on a permanent basis. Two new 8 ft. by 6 ft. double deck ovens were installed and later joined by the original, so that the store now has three of these ovens arranged on one side of the bakehouse. Each oven deck has two pre-set thermostats consisting of Cambridge Instrument 8 in. direct reading dials, one each for top and bottom heat. These operate separate contactors located in control panels on the side of each oven. On and off controls are by push button on the oven front and a kWh. meter on each oven checks the consumption. The separate control on each oven permits a number of temperatures to be operated simultaneously. This enables the production of a variety of confectionery requiring different baking temperatures, including slab cakes, dinner buns, Swiss rolls, and meringues.

The G.E.C. has now been entrusted with a further order for a 35 ft. double chain confectionery travelling oven and three 10 ft. by 6 ft. double deck drawplate ovens, all fitted with similar controls, for the new bakehouse of Lewis's associate company, Reece and Sons, of Liverpool.

New bakery for department store.

Automatic Straight-line Filler

FOR LIQUID AND SEMI-LIQUID PRODUCTS



Designed to fill jams, jellies, marmalades, soups, syrup, honey, creams, ointments, and other liquid and semi-liquid products, the latest automatic straight-line filling machine, manufactured by Robert Kellie and Son, will handle from 30 to 240 containers per minute of the 1 lb. size, 60 to 240 containers per minute of the ½ lb. size, 30 to 120 containers per minute of the 2 lb. size, and from 30 to 80 containers per minute of the 3 lb. size.

The two pumps handling the product are of the rotary concentric positive acting displacement type powered by a 2 h.p. motor through a variable speed box, thus giving infinitely variable delivery from each pump between 136 and 544 gallons per hour. The pumps, which are mounted outside the main frame of the machine for easy access, are independently controlled, each being fitted with a multi-disc plate clutch which allows easy starting and stopping. On the smaller sizes of containers, and on the lower speed ranges of the larger size containers, one pump only need be used.

The conveyor, built up of stainless steel slats in conjunction with a roller type chain, is synchronised with the filling head, star wheels, and spacer, and driven by a 1 h.p. motor through a variable speed box and a change speed gear box, giving variation in speed between 30 and 240 containers per minute.

The motors, variable speed boxes, and gearing are contained within the main frame of the machine, thus providing protection for the operator and obviating any damage during cleaning.

The main frame of the machine is of cast iron construction and is, as far as possible, free from pockets and projections. Readily detachable steel panels have been let into the main frame and provide easy access to internal components.

The guide rails, which can be adjusted to suit the varying heights and diameters of containers, and also the star and spacer wheels, are made from Tufnol or other plastic material and are unlikely to score or scratch containers. Varying sizes of star and spacer wheels may be provided to suit different diameters of containers.

All controls are within easy reach of the operator and the hand wheels are covered with a plastic material.

The instruments provided are a flush mounting dial reading thermometer for each pump, enabling filling temperature to be easily ascertained, and a tachometer and recorder.

The dial of the tachometer is graduated to read the number of containers being filled per minute, and will respond immediately to any adjustment made through the hand wheel of the variable speed box to the conveyor. It can be so regulated to give directly any speed variation between 30 and 240 per minute. The counter inset in the dial of the tachometer records the number of containers filled.

Electrical interlocks and signal lamps are provided so that the motor driving the jar conveyor must be in operation before the pumps can be started. Similarly, at the end of the run the conveyor does not stop until the motor operating the twin pumps has been switched off.

Mechanical interlocks are also fitted to prevent any person throwing the second pump into gear when the first pump only should be in operation. Both right and left hand pumps may be operated simultaneously or consecutively.

Argentine Contracts for Motors

Two further large contracts for the delivery of electric motors to the Argentine have been secured by Small Electric Motors. These contracts total between £20,000 and £30,000, and are particularly a matter for congratulation in view of the fact that very few permits are being issued for the importation of English manufactured goods into the country.

Swedish Couverture for Britain

Little known in Great Britain before the war, the Cloetta Company, Sweden's largest chocolate manufacturers, serve most of Scandinavia and Europe (apart from a world-wide trade), and it has now been found possible to divert limited quantities of fine quality chocolate couverture to Britain, where distribution is handled entirely by the sole agents and concessionaires, Margulies Bros.

The company's model factory is set in the rich dairylands of Sweden which provide the milk used for manufacturing, and around it, Ljungsbro, a community of some thousand workers and their families, has grown up since 1873 when the Cloetta brothers first established their business.

Chocolate confectionery, including couverture, is produced by special methods with modern equipment designed and made on the spot by the company's engineers; electric power to the factory and to the whole community is provided by the firm's own power station.

Crevice-free Cut-off Valve

Particularly intended for the controlled gravity-effected outlet from containers of powdered food materials such as flour, a recently invented valve is also capable of being used for small solids and the control of fluids, either liquid or gaseous, in pipelines.

When open either partially or fully it presents no crevices, ledges, or other abrupt obstructions to prevent free flow of the material or allow it to build up therein.

The valve consists of a one-piece resiliently flexible straight bore rubber or synthetic rubber sleeve with outwardly directed reinforced radial flange at each end whereby it can be fixed to a container outlet or bolted into a pipeline. The cut-off is effected by two diametrically opposite smooth solid drawn sliding tubular beams closing on the sleeve, threaded and guided on parallel bright rods and operated by a double pair of pivoted scissor links controlled by a quick-acting left and right hand screw with pivot nuts.

Protection of the sleeve and mechanism against weather and sunlight is provided by means of a two-piece slip on sheet metal casing, secured in position by the four guide rod nuts.

Except for the sleeve, the valve is of light all-steel fabrication. Owing to the absence of castings and accurately fitted metal surfaces, the valve's light and simple construction allows for quick manufacture and delivery.

The valve may be of any size and can be made to suit flange connexions of existing plant.

Mr. Leonard Dodd.

Retirement

After forty-four years in their service, Mr. Leonard Dodd has retired from his post with Reads of Liverpool.

Mr. Dodd, who is well known in the drum and tin box industries, represented the company in London for thirty-three years, rejoining head office as general sales manager in 1944, a post which he held until April, 1950. For the past year Mr. Dodd has been general sales adviser.

British Council Report

A series of articles, covering in general terms the Council's work in the main territorial regions and in a number of special subjects of major importance, comprises the major part of the annual report of the British Council for 1949-50.

Details omitted from the main text have been arranged in a series of tabular and statistical appendices; these cover information on the composition of the various committees, administrative and representative personnel, courses, lectures, tours, exhibitions, and other activities organised by the Council, as well as library services, book exhibitions, and publications.

Flying Strawberries to New York

Since the scheme to fly fresh Scottish strawberries to New York within twenty-four hours was announced, almost every airline in the world had asked to be put in touch with Moray Firth Growers, said Lord Bilsland, chairman of the Scottish Council (Development and Industry), speaking in Edinburgh recently. The idea was to make the strawberries a luxury export, and special efforts would be made to have the fruit in New York on the morning after it had been picked.

Appointments

The following have been appointed members of D.S.I.R. Research Boards:

Chemistry Research Board

Professor R. D. Haworth, D.Sc., F.R.I.C., F.R.S. (Professor of Chemistry, Sheffield University).

Mr. R. M. Winter, F.R.I.C. (I.C.I.).

Food Investigation Board

Mr. P. V. Danckwerts, G.C. (Department of Chemical Engineering, University of Cambridge).

Pest Infestation Research Board

Professor A. D. Peacock, D.Sc. (Professor of Zoology, University College of Dundee).

Mr. N. D. Riley (Keeper, Department of Entomology, British Museum [Natural History]).

Water Pollution Research Board

Professor D. M. Newitt, M.C., D.Sc., F.R.S. (chairman).

Mr. H. W. Harvey, Sc.D., F.R.S. (hydrologist, Marine Biological Association).

Mr. S. H. Jenkins, D.Sc., F.R.I.C. (chemist, Birmingham Tame and Rea District Drainage Board).

All these appointments are for four years, with the exception of that of Professor D. M. Newitt, which is for five years, and all took effect from April 1, 1951. Members give their services free and only their actual expenses are paid. They serve on the Research Board as individuals, not as representatives of any organisation or body to which they may belong.

*

Mr. John S. Wingate, for many years associated with the Westburn Sugar Refineries and chairman since 1922, has relinquished his office as chairman and joint managing director. He has been appointed President of the company and will remain a director.

Mr. J. Reid Kerr, a director since 1922, has been appointed chairman and joint managing director in succession to Mr. Wingate.

Messrs. David A. Kerr, Walter R. Kerr, and Charles W. Stewart (secretary) have been elected directors.

*

At the recent annual general meeting of The Aluminium Development Association, Mr. Austyn Reynolds, B.A., A.M.I.Mech.E., A.F.R.Ae.S., was elected President for the year 1951/2. Mr Reynolds is a director of Tube Investments and deputy chairman of T.I. Aluminium and the associated aluminium companies. He has served on the A.D.A. Council for six years and was Vice-President of the Association during 1950/1.

The new Vice-President is Mr. H. G. Herrington (High Duty Alloys).

Mr. F. G. Woollard, M.B.E., M.I.Mech.E., M.I.P.E., M.S.A.E., was re-elected chairman of the Executive Committee.

*

Mr. R. H. Farmer, a vice-chairman of the Road Haulage Association and national chairman of the R.H.A. Express Carriers Group, has been appointed to represent the Association on a committee of the British Standards Institution set up to consider the standardisation of pallets.

Palletisation was one of the main subjects investigated by the team, on which Mr. Farmer represented the R.H.A. recently sent under the auspices of the Anglo-American Council on Productivity to examine the methods of transport in the U.S.A.

*

Mr. T. D. King, M.B.E., who since 1946 has been tea buyer and blender, and Mr. K. E. Newbold, A.C.I.S., A.I.A.C., who has been secretary of the company from 1948, have been appointed to the board of directors of John S. Derbyshire and Son.

*

Mr. Bennet Palmer, O.B.E., has been appointed a director of Associated Biscuit Manufacturers.

Mr. Palmer, who is a Fellow of the Institute of Chartered Accountants, is already secretary of the firm, director and secretary of Huntley and Palmers, and a director of Huntley, Boorne, and Stevens.

*

Mr. H. McConchie has been appointed manager of the new branch office of Newman Industries situated in Russell Chambers, 54, Merrion Street, Leeds.

Mr. McConchie is a past chairman of the Leeds branch of the Association of Supervising Electrical Engineers.

Mr. H. McConchie.

Problems in Works Management

TRAINING, JOB ANALYSIS, AND MORALE

"The problem that faces industry today is the recruitment, selection, and training of prospective supervisors and the development of existing foremen," said Mr. F. J. Burns Morton (A. E. Hawley and Co.), when he introduced his paper on "The Selection and Training of Foremen" at the third national conference of the Institution of Works Managers held at Southport recently.

Foremen of the future should have a better general education, more precise technical training, special instruction in supervision, and, above all, training before appointment.

In order to obtain and retain an effective group of foremen, he said, it is necessary to accept them as part of the management team, to make sure that their status is improved and recognised, and to be certain that they are supplied with adequate information for the proper control of their departments. The foreman should have the personal support from management to enable him to use his influence effectively under conditions of full employment.

Answering the question "What direct and indirect benefits does an employer gain from a job analysis system?" arising from his paper entitled "Wages Payment Systems Based on Job Analysis," Brigadier N. F. Patterson (Monsanto Chemicals) said that job evaluation spotlights management inefficiencies, particularly supervisory inefficiencies on the shop floor. The job analysis engineer evaluates the job, not the man, and compels study of the invidual's fitness for each or any task; employment procedures and job specifications should therefore improve selection.

Various methods of using job analysis as a basis for wage payment have yet to be fully developed. The points bonus system of payment is quite common, but there are opportunities for allying job evaluation with group bonus schemes, profit-sharing schemes, and the like.

The mental climate in which a task is performed is more important than any single feature of an organisation, said Mr. A. M. Hudson Davies, O.B.E., M.A. (Fibreglass, Ltd.), when addressing the conference on "The Reorganisation of a Small Company."

In 1945 a relatively new and unfamiliar product was being made by small departments in two large firms. It was decided to "hive-off" these two operations and to combine them in an independent company, and Mr. Hudson Davies outlined some of the problems of integration and morale arising from this decision.

The conference opened with a dinner and reception presided over by Mr. J. Connell, B.Sc., chairman of the Institution. Among the guests were the Mayor and Mayoress of Southport, the Rt. Hon. Lord Rochdale, O.B.E., T.D., D.L., and Mr. R. S. Hudson, Member of Parliament for Southport.

Marketing of Alginates

Since 1937, Albright and Wilson have been the official distributors of the alginates manufactured by Alginate Industries, Ltd. The development of these products has now reached a stage where the manufacturers are in a position to take over all marketing and sales activities. All correspondence and orders relating to alginates should in future be addressed to: Alginate Industries, Ltd., Walter House, Bedford Street, Strand, London, W.C.2. (Telephone: Temple Bar 0451.)

Alcohol and Methylated Spirits Dearer

As a result of the further considerable increase in the world price of molasses, The Distillers Company have found it necessary to increase as from April 1, 1951, the prices of ethyl alcohol and methylated spirits. Special grades of ethyl alcohol are subject to a premium on the new prices.

The Methylating Company have announced that the prices of methylated and other denatured spirits have been adjusted accordingly.

Erections and Extensions

Plans have been prepared by Leney's Table Waters to extend their factory at Hart Street, Maidstone.

*

Approval has been given to the plans of the Cheltenham Crisp Company for the extension of their factory at 23-26, Worcester Street, Cheltenham, Gloucestershire.

*

A new bakery is being erected on a site at St. George's Square and Kent Street, Portsmouth, by Campions (Bakers).

*

Plans have been prepared by John Wragg and Co. to erect a new food and egg packing depot on a site at Thomas Street, Sheffield.

*

Extension of their factory premises at Dranchapel, Lanarkshire, is planned by Beatties Biscuits.

*

Plans for the erection of a new confectionery factory on a site at Whittington Moor, Chesterfield, have been prepared by Willett Bros.

Premises in Whapload Road, Lowestoft, acquired by Coastal Canneries are to be opened as an extension of their fish canning factory. At present, 120 workers are employed by the firm.

*

To meet increasing business and for the convenience of customers in Staffordshire and the potteries area, J. H. Fenner and Co. have opened an additional branch at 95, High Street, Stoke-on-Trent, under the management of S. Parker.

Work has now commenced on the extension to the company's main factory. The considerable amount of extra floor space which will be provided will enable certain manufacturing developments to be undertaken, and will also relieve some of the congestion in the new factory which was erected some three years ago.

One of the most interesting features of the new extension will be a test house for mechanical rubber and other products, which will enable special rigs to be set up to ascertain the behaviour of standard products under a wide range of actual working conditions. It is expected that the new extension will be complete some time in the autumn of this year.

*

Plans to extend their bakery at a cost of £40,000 have been prepared by Reading and District Co-operative Society.

Newport Ice Cream Depot Reopens

The ice cream supply depot of T. Wall and Sons in Cromwell Road, Newport, closed for the past ten years, has been reopened. Depot manager is Mr. M. H. Tucker, in charge of a staff of eighteen.

The depot will supply ice cream to the Monmouth, Lydney, Abergavenny, Talybont, Brynmawr, Tredegar, and Marshfield districts.

Market for Imported Fish

Despite the prevalence of vegetarianism in India, large numbers of every caste and creed in the country eat fish as a regular item of their diet. Business prospects in the immediate future as regards imported fish are not encouraging, but they may eventually improve if the planned development of the Indian fishing and fish marketing industry has the effect of opening new markets for fish in the interior.

Full details of competition in this trade, current price levels, customs duties and special regulations, packaging, terms of payment, and other aspects are given in a notice entitled "India: Notes on the Market for Imported Fish" produced by the Commercial Relations and Exports Department of the Board of Trade.

Fruit Squash Distributors

The following companies have been appointed by H. W. Carter and Co. as distributors, in Scotland, for Quosh pure fruit squashes and cordials:

John and James Tod and Sons, Ltd., Leith, Edinburgh, 6; Smith and Johnston, Ltd., Weigh-House Square, Aberdeen; A. V. Chalmers (Inverness), Ltd., Secon St., Inverness; and Marshall and Stevens, Ltd., College St., Glasgow, C.1.

Canning Factory Projects

The Blairgowrie and Coupar Angus factories of Smedley's are to start canning rhubarb this month. Although there has been no production since December, owing to tinplate shortage, the works have not been idle. Despatching has continued as well as the repair and overhaul of machinery and stockpiling of cans.

The canning factory of Crosse and Blackwell at Peterhead may take up to 25,000 crans of herring this season, if they are available at the Buchan port. The order, however, will depend on whether there is a reasonable chance of continuity of supply at a satisfactory price. There is a possibility of a smaller fleet operating from Peterhead this season, and, with insufficient supplies of herring, it may not be worth while changing plant and equipment over to handle herring, a step which could not be taken at short notice.

Society for General Microbiology

The following have been appointed as officers and committee of the Society for General Microbiology for 1951-1952:

President: Prof. J. W. McLeod, F.R.S.
Meetings Secretary: W. E. van Heyningen.
General Secretary: J. G. Davis.
Treasurer: R. Lovell.
Editors: B. C. J. G. Knight and A. F. B. Standfast.
Associate Editors: G. C. Ainsworth, W. B. Brierley, T. Gibson, A. T. R. Mattick, A. A. Miles, K. M. Smith, A. W. Stableforth, and D. D. Woods.
Committee: L. A. Allen, C. H. Andrewes, P. W. Brian, H. J. Bunker, A. W. Downie, Betty Hobbs, H. B. Maitland, N. W. Pirie, H. Proom, P. M. Frances Shattock, and G. Sykes.
Representing International Association of Microbiologists: Sir Alexander Fleming.

The Society, which was founded in 1945, now has 983 members and will hold its September meeting at Manchester. Any information about the Society may be obtained from the General Secretary, 35, Villiers Road, Southall, Middlesex.

Unloading the moulded rolls from the Rubury divider and moulder.

Automatic Divider and Moulder

Since dough of normal tightness and normal yeast content is used with the machine, the installation of the Rubury fully automatic divider and moulder, manufactured by Funditor, does not entail any change in dough formulae and all operations up to the dividing and moulding process proceed as usual. The texture of the rolls and buns remains unimpaired, and the gentle moulding action and delicately sprung pressure plate of the machine do not break down the gluten in the dough.

Once the dough is placed into the machine, the action of dividing and moulding is carried out in a continuous and automatic operation. To assist high-speed operation, the moulding plate has a return spring to centre it automatically after the completion of the moulding process.

Thirty or thirty-six rolls or buns are divided and moulded at a time in a period of about ten seconds. A production of more than 6,000 rolls per hour can, therefore, be maintained, and if one worker is able to devote all his time to the loading, operation, and unloading of the machine and uses the three moulding plates supplied, this output can be considerably increased.

Accurate division of the dough ensures rolls or buns of consistent weight and size with greater sales appeal—an important point where "off-the-counter" sales form a large part of the bakers' trade.

Change of Address

The address of the Regional Advisory Council for Higher Technological Education is now Tavistock House South, Tavistock Square, London, W.C.1. (Telephone: Euston 3484/3 [subject to confirmation].)

Precooked Breakfast Food from Oats?

For some time porridge, despite its nutritional value, has been losing its popularity as a breakfast food in favour of the precooked packed foods which are easier to prepare.

The Scottish oat trade is now seeking to compete in this field by producing a precooked breakfast food, packaged and ready for serving, on the lines of the present precooked maize. According to information given at a meeting of the National Farmers' Union Council in Edinburgh, the molecular structure of the oat is hampering the evolution of such a food. Unlike the maize flake, the oat flake goes mushy when milk is added. Work on this problem is being continued.

Tubes in Industry

A cross-section display of the products manufactured by their precision steel tube, cold rolled metal sections, and aluminium companies comprised the exhibits of Tube Investments at the Birmingham section of the British Industries Fair.

Apart from a show of the general range of seamless and welded tubes in steel, stainless steel, and aluminium alloys—with an indication of the wide variety of products in the making of which they are used—there was a special display of small tubes, including a new record "smallest tube in the world," and many small bore, composite, and non-circular tubes, which are used in scientific research and new industrial processes.

There were also high pressure cylinders; a series of cold rolled metal sections for the building industry, including nailable steel joists; aluminium beams and girders; tubular forgings; and stainless steel tubes and fittings for the dairy industry.

Industry and the Festival

A D4 Mono pump has been selected as a good example of British pump engineering practice. This is being displayed on a turntable in the Power and Production Section on the South Bank site.

An A2 pump is being used to supply oil to twelve smoke generators, situated at the top of the Mining Pavilion Tower.

Three H4 stainless steel Mono pumps are being used at the Festival Gardens at Battersea Park, London, for transferring beer from road tankers and beer barrels to storage tanks.

*

For exhibition in the Transport Pavilion on the South Bank, Crompton Parkinson have supplied tramcar equipment representing the most modern practice and arranged as a working demonstration that can be operated by visitors. A single-phase house service meter is also shown and lighting fittings are installed at various parts of the Exhibition.

In addition to exhibits at the Poplar Architectural Exhibition and the Festival Gardens, the company are showing vapour-proof fluorescent lighting fittings for cow byres and milking sheds at the Northern Ireland Agricultural Exhibition, as well as Ashford totally enclosed decorative fluorescent lighting fittings for interior lighting. This type of fitting has a diffuser of fluted opal plastic material, designed to minimise dust collection, with cream enamelled metal endplates.

*

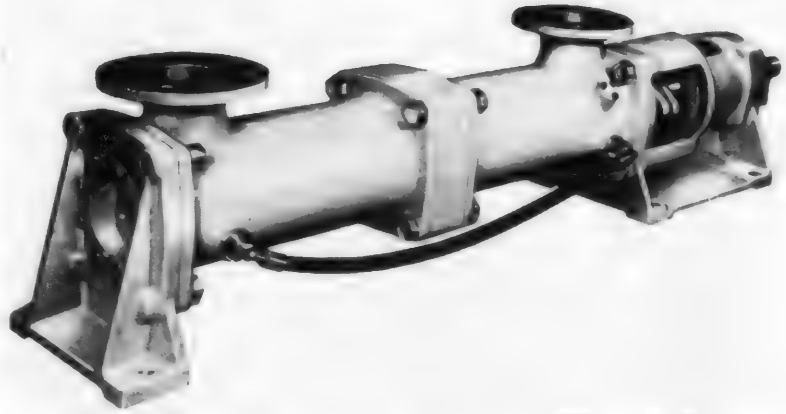
Two high-speed sugar boilers' gas stoves, two 6 ft. by 3 ft. water-cooled plates, a gas-heated plate, and a box type pulling machine are being loaned by William Brierley, Collier, and Hartley for the duration of the Festival. This machinery is employed in the manufacture of lettered rock at the Rock Pavilion, South Bank Exhibition, the lettering through the rock being "South Bank, 1951."

The company have also supplied a popcorn stove and mixing pan to the Festival Gardens.

Photographs will also be displayed of their latest syruped peel and marmalade peel cutters, and of the continuous soft centre plastic sweets former and cooler.

*

Contributions by The British Thomson-Houston Company to the Festival range from the largest oil circuit-breaker ever made in Great Britain to fractional horsepower motors and a motor-cycle magneto. At Kelvin Hall, Glasgow, Mazda flameproof lighting equipment is being demonstrated, and the floodlighting of Windsor Castle was planned and executed in its entirety by the company at their own expense.



Mono pump for handling highly viscous and pulped food products.

Apart from taking an important part in providing equipment for the telecinema, the company are showing a Shuntarc oil-break circuit-breaker and the BTH-Whittle jet propulsion engine at the South Bank Exhibition, a model of the 1,200 s.h.p. gas turbine-alternator set installed in the D.E.S. *Auris*, and a 16 mm. sound film projector at the Land Travelling Exhibition, and a mercury-art rectifier rated 400 amp. 600. v. at the Exhibition of Industrial Power, Kelvin Hall.

In addition to these contributions, there are entries selected by independent authority as representative of advanced design in British engineering, which are included in the *Design Review*.

*

A private exhibition of high quality sheet metal working and machine tools is being held by F. J. Edwards during the full course of the Festival of Britain at their showrooms at 359-361, Euston Road, London, N.W.1, and at 242, Liverpool Road, London, N.1., from 9 a.m. until 6 p.m., Mondays to Fridays inclusive.

Guillotines, punching and shearing machines, bar croppers, folders, and seamers are among the tools on show, and technical staff will be on hand to demonstrate the machines.

A car service has been arranged to bring interested parties from their hotels in London to this exhibition; intending visitors are requested to make known their address and the date and time at which their visit may be expected.

*

Taking advantage of the opportunity to break away from austerity, John Gosheron and Co. are offering to industry attractively printed Transotape self-adhesive tapes in 72 yard rolls for sealing and decorating packages.

"Two Smart Boys"

"Two smart boys" are the central figures in the national advertising campaign which is being undertaken by L. Rose and Co., and, through the medium of humorous dialogue, it is hoped to build up interest in the company's fruit squashes.

The firm's lime juice cordial has been nationally advertised since 1865, but for the first time this year orange, lemon, and grapefruit squashes are to be included.

Floor Finishes for Factories

Dealing with factory, warehouse, brewery, and practically every other type of floor used in industry, a recently published booklet, *Floor Finishes for Industrial Buildings*, contains much information that has not hitherto been published and is regarded as one of the most important of the D.S.I.R. publications.

Floor finishes probably give rise to a greater diversity of problems in industrial buildings than any other single part. Safety and resistance to wear and chemical attack are two obvious requirements for floor finishes, but the report also considers less obvious factors such as the "tread" or "feel," noise, and the effect of appearance. All types of industrial floor finish are listed and their performance for a wide variety of uses is given.

Distinctive Marmalade Packs

A small quantity of Keiller Dundee marmalade is being produced again in the familiar white pots which were withdrawn during the war. This line is also sold in glass jars.

"Little Chip" marmalade has just been reintroduced by the company into the south of England; this, too, had to be withdrawn following the destruction of their Silvertown factory in the early days of the war.

BOOKLETS RECEIVED

The cost of fuel makes the conservation of heat a matter of prime importance, and requires not only efficient generation and utilisation of steam, but also maximum heat recovery from condensate.

In a booklet recently published by The Drayton Regulator and Instrument Company are given some helpful notes on the formation and utilisation of flash steam or re-evaporated condensate, and some useful tables and diagrams are included.

■

The most important methods employed in localised exhaust ventilation are illustrated in a recently published booklet, *Sturtevant Exhaust Ventilation*. Fume removal from furnaces, stoves, ovens, and other applications, the handling of corrosive fumes, steam removal from boiling pans, removing fumes and vapours from baking ovens, keeping kitchens clear of steam and odours, and the spray booth exhaust are all dealt with in this publication.

■

In the July, 1950, issue of FOOD MANUFACTURE, reference was made to the first of a planned series of brochures outlining the properties and uses of Admul glyceryl monostearate. Advita have now issued the second of this series, which deals entirely with the use of their product in ice cream manufacture.

■

Their range of crushing, pulverising, and grinding equipment for friable and semi-friable materials is described and illustrated in a booklet issued by British Jeffrey-Diamond. These machines are compactly designed for ready inclusion in new or existing crushing and screening plants, and accessibly arranged for inspection, cleaning, and maintenance.

For those wishing to obtain information on crushing equipment, a questionnaire is provided, so that the makers can be fully conversant with the particular requirements.

■

A brief outline of the history and policy of the firm, from its establishment in Bishopsgate and St. John's Wood to the present-day location of the head office in Euston Road, London, with works at Chard, Somerset, and the conception and building of the London machine centre at Islington, with a total area of over 150,000 sq. ft., already partly in use, for display, stores, and works, is contained in a booklet issued by F. J. Edwards.

■

Intended to give an idea of the comprehensive range of chemical plant and processes in which they specialise, a new brochure has been produced by Kestner Evaporator and Engineering Co. No attempt is made to give detailed descriptions of the plant mentioned, as these are to be found in the catalogues devoted to each type.

Acid handling and recovery plant, air and gas driers, crystallisers, distillation and drying plant, evaporators, laboratory and pilot plant, and stirrers and mixers are a few of the items covered in this brochure.

■

Everyone concerned in the preparation, handling, and serving of food will find a straightforward explanation of the dangers of food contamination in a new Gas Council booklet entitled *Hot Water and Clean Food*.

The contents include a note of the requirements under the Food and Drugs Act, 1938, with particular reference to the use of hot water for personal hygiene, dish washing, and cleaning of premises, and a summary of up-to-date medical opinion on the subject. These notes are supported by illustrated examples of the latest gas water heaters which give an automatic hot water service suitable for every need from sterilisation to hand washing.

OBITER DICTA

- Angry wives grill butchers. —*Headline in the "Nottingham Journal."*
- We may run short of meat, but need we run short of logic? —*Mr. Winston Churchill.*
- It is as important to get food for people to eat as it is to give people free teeth to eat nothing with.—*Mr. Osborne, M.P.*
- I think it would be deplorable if ice cream took the place of honest Scotch broth on the daily menu.—*Mr. G. Banks, at the recent meeting of the Royal Sanitary Institute.*
- Old, stale, or rotten foods do not cause food poisoning. Cheese is still good for you even if it gets up and walks.—*Dr. I. Gordon, Medical Officer of Health for Ilford.*
- In America the can opener is regarded as the housewife's best friend. Do not let that be said of us in this country.—*Delegate at a recent meeting of the Federation of Women's Institutes.*
- The rapid growth of world population in the last half century would have outstripped the supply of food and raw materials but for the chemical industry.—*Mr. J. Hughes, technical manager, I.C.I., Wilton.*
- The word "offal" is misleading. People think that it means all sorts of dreadful things, but in fact it includes things like sweetbreads, chilled tongue, and meat of a high nutritive value.—*Mr. Maurice Webb.*
- Do scientific persons know so little of the facts of life as to suppose the contemporary sausage contains pork enough to provide board and lodging for a single germ?—*"Birmingham Post."*
- The public should be advised to drink all the milk they can in the spring, for they won't get it in the winter. The public should be made to realise that the farmers can't afford to pay the high prices for proteins and concentrates.—*Mr. G. W. Keir, at a meeting of the Canterbury branch of the N.F.U.*
- To the lovers of good eating! William Lewis begs leave most respectfully to inform the inhabitants of Swansea that he has purchased a large stock of Cardigan and Southdown sheep and lambs; also of capital heifers of the Pembrokeshire breed, which will cut seven inches thick on the ribs, and eat as tender as a chicken.—*Advertisement in* 1806.

Company News

The year under review had not been easy because of rising costs, said Dr. D. W. Kent-Jones, Ph.D., B.Sc., F.R.I.C., chairman of Procea Products, at the fourteenth annual general meeting held recently at the Waldorf Hotel. The company had continued to make reasonable overall profit, mainly because of increased output, but they could not take up the rising cost indefinitely in this way and it would be necessary to pass on to consumers the recent increased flour price. In the circumstances, it was gratifying that the Board had been able to recommend the usual final dividend.

To date, they had 2,800 bakers and there were now 2,500,000 Procea loaves being sold each week. Their original factory at Hanwell was being brought up to date, and certain developments at Irthlingborough and Colnbrook were being considered.

The competition scheme continued to be well supported, and during the year they had successfully re-introduced their pre-war brown and fruit loaves, as well as white, brown, and fruit rolls.

Rise in Road Haulage Rates

The National Rates Committee of the Road Haulage Association held an emergency meeting recently to discuss the increased duty on motor fuel imposed by the Budget. After careful consideration, the committee recommended members of the Association to increase their general haulage rates by 2½ per cent. as from May 1, 1951.

World Food News

Synthetic Rice

Indian scientists have succeeded in manufacturing synthetic rice from tapioca, an edible root largely found on the west coast. Dr. V. Subramaniam, Director of the Central Food Technological Research Institute, said that if two million acres could be brought under tapioca cultivation, it would solve India's food problem.

Co-op. Creamery Wins Butter Trophy

The Read Perpetual Challenge Cup, which is presented annually to the creamery securing the highest marks at surprise butter inspections, has been awarded to Dromkeen Co-operative Agricultural and Dairy Society, Co. Limerick, as a result of such inspections held by the Department of Agriculture in the Republic of Ireland during 1950.

The cup was presented to the winning creamery by Mr. Dillon, the Minister for Agriculture, at the Royal Dublin Society's Spring Show held at the beginning of May.

OVERSEAS ENQUIRIES

British-made Provisions

The British Consul-General at Houston, Texas, has reported that Cobbs, Inc., of 2034, Westheimer, Houston, and Years Ago Country Store (Wm. L. Bradburn and Guy Douglass, owners) of 1117, Elgin, Houston, are interested in importing British-made provisions such as pickles, relishes, jams, jellies, *entrée* items in tins, soups, fish, fruits such as gooseberries, desserts in tin or glass, and steak and kidney puddings, from the United Kingdom.

Firms interested in these enquiries should send quotations in dollars c.i.f. U.S.A. direct to the Houston firms at the addresses given above. Delivery dates and time that would elapse after receipt of orders should also be stated.

Smoked Boneless Herring

The British Consul-General at Chicago has reported that Mr. David Lapport, President of Bar Food Products, Inc., 651, West Fulton Market, Chicago, 7, desires to obtain supplies of United Kingdom smoked boneless herring. He is interested in a smoked herring that is well salted and cured. It should have a good keeping quality, and small sizes would be preferred. He is at present buying similar fish from Canada and his requirements would be for carload lots.

Firms interested in this enquiry should forward quotations in U.S. dollars direct to Mr. Lapport at the address given.

Floating Factory for Sardines

The Norwegian floating herring factory ship *Clupea* is proceeding this summer to North-West African waters to catch sardines for converting into oil and meal.

Fishing circles regard this experiment with great interest. It is thought that, just as the Norwegians pioneered pelagic whaling by fitting out floating factories for operating in the Antarctic, so may the *Clupea* be the precursor of a pelagic herring industry.

Essential Oils Research

The latest Schimmel report on essential oils, aromatic chemicals, and related materials covers the years 1947-48. As in previous editions, the book is produced in alphabetical arrangement, but this time there are forewords to the essential oils and aromatics research sections drawing attention to a few of the more outstanding developments described.

In spite of the considerable activity in the synthesis of aromatic materials and the wide use of such products, interest in the natural essential oils has by no means abated, and some of the most interesting items in the book deal with investigations of new oils. One item deals with a report from an experimental station in Java where leaves of the shrub *Clausena anisata* were found to give high yields of an essential oil containing 75 to 90 per cent. anethol. The oil could be used in place of aniseed oil for many purposes, and could probably be produced more cheaply. Another development concerned experimental work carried out in Texas on the cultivation of golden rod as an essential oil plant. The results indicated that the oil, which resembles anise oil in flavour and odour, could be produced easily and economically on a commercial scale.

Silicones for Sanitation and Speed

Featuring great heat stability and long life, silicones are being used by a rapidly increasing number of food technologists to increase production, cut costs, and simplify sanitation.

These materials, manufactured by Dow Corning Corporation, Michigan, U.S.A., are effective in small amounts: an ounce of a silicone defoamer is capable of killing foam in 20,000 gallons of fermenting wine; a single application of a silicone coating keeps bread from sticking to pans for over 100 bakes; and one packing with silicone grease lubricates steam room truck bearings for an entire season.

Other applications include easing the release of frozen foods from containers, avoiding sticking and wax build-up in heat sealing, and providing improved motor insulation in wet operations.

European Plant Protection

ORGANISATION TO FOSTER CO-OPERATION

A Convention to establish the European Plant Protection Organisation was signed on behalf of the United Kingdom in Paris on April 18, 1951. Membership of the Organisation, whose object is to encourage international co-operation to prevent the spread of pests and diseases of plants and plant products, is open to all European and Mediterranean countries.

The Organisation will advise member Governments on measures necessary to prevent the introduction of plant pests and diseases into their territory and to prevent the spread of such pests and diseases; assist member Governments to carry out such measures; and, where practicable, co-ordinate and stimulate international campaigns against plant pests and diseases.

It will also obtain information from member Governments of the existence, outbreak, and spread of plant pests and diseases and convey such information to member Governments. Through the Organisation, information will be exchanged on international plant quarantine regulations, and possible ways of simplifying and unifying such regulations will be studied.

Help will be given to facilitate co-operation and research into all matters concerning plant pests and diseases and in the exchange of relevant scientific information. Any other necessary and appropriate action to prevent the introduction and spread of pests and diseases of plants and plant products will also be taken.

The Organisation will continue to do the work formerly carried out by the International Committee for the Control of the Colorado Beetle and the European Working Party on Infestation Control. It will concentrate on plant pests and diseases of economic importance and, in particular, on Colorado beetle, potato root eelworm, San José scale, wart disease of potatoes, and insect, fungus, and rodent pests of stored food, and rodent pests of crops.

Cocoa Pest Campaign

A small research unit from Pest Control, Limited, which arrived in the Gold Coast in November, 1949, and has been carrying out experiments with insecticides at the West African Cocoa Research Institute at Tafo, 65 miles north of Accra, has announced successful demonstration killings of the mealy bug, which spreads the swollen shoot disease in cocoa trees. It was stated, however, that a long time would be needed to verify first results and judge the effects of the insecticide. The latter can only destroy the pest and not cure the affected tree.

New Basis for Sauces

A useful sauce which can be used either as a cream sauce, or as the basis of various sauces and cream soups has been evolved by Mrs. F. W. Case of Quebec.

The sauce is packed in foil and kraft laminated paper, and tests show its shelf life to be approximately one year under ordinary conditions. Compared weight for weight with well-known soups packed in cartons, the sauce is claimed to carry exactly four times the quantity without sacrificing flavour. In addition, the small size of the container enables a considerable saving in storage space.

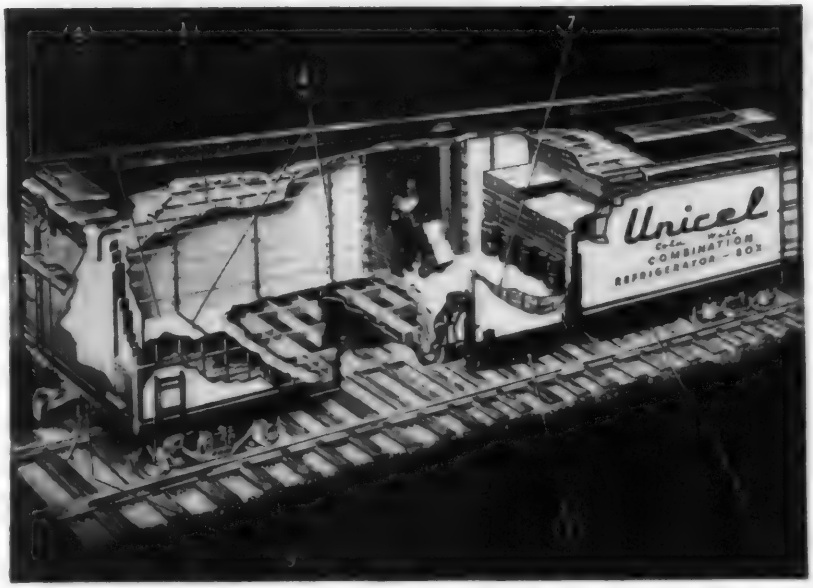
N. Ireland's Fishing Industry

In presenting his Department's estimates for the current financial year, the Northern Ireland Minister of Commerce referred to the fishing industry, which had had another difficult year. The value of sea fish landings in 1950 was £121,000, compared with £207,000 for the previous year.

The returns from herring fishing, said the Minister, were only slightly smaller than in 1949, but white fish were reduced by almost 50 per cent. The removal of controls in April last year, with the discontinuance of the 10d. per stone subsidy on white fish and of the freight equalisation scheme, caused a good deal of hardship to fishermen, who were obliged to send a large proportion of their catches to Great Britain markets.

The subsequent restoration of the white fish subsidy gave much needed assistance to the producer, but the heavy freight charges continued severely to handicap the industry. The present scarcity of meat had stimulated the demand for fish and thus improved earnings, but the high cost of gear and maintenance did not allow a sufficient margin of profit to the producer.

The Sea Fish Industry Bill, which proposed to set up a White Fish Authority to develop the industry, contained a provision whereby it would be open to Parliament to bring Northern Ireland within the scope of the new Authority.



Features of the Unicel refrigerator car are (1) cold wall; (2) powered by Diesel fuel en route; (3) powered by electricity at sidings; (4) goods fastened more securely to permanent built-in tie-downs; (5) shock absorber; (6) and (7) easier cleaning because of hinged steel floor racks, rounded corners, flush interior door, and special floor construction.

Refrigeration on Rail

Made of plywood electronically laminated with special plastics, a new lightweight refrigerator box car, with a capacity of 3,168 cu. ft., is claimed to be stronger than the conventional freight car, and requires 11 to 20 tons less steel.

Comprehensive tests, which have been carried out in connexion with the reaction of the car under various atmospheric conditions, showed that it could hold cold or heat, to a uniform consistency, varying only 2 or 3 degrees compared with the 10 to 12 degrees in conventional refrigerator cars.

The construction of the new car, built by the Pressed Steel Company of Chicago, makes it unnecessary to put into the car any more cold (5 to 15 per cent.) than will be needed to counteract the enzymic action of the contents, *e.g.* fruit and vegetables. The remainder of the cold air (85 to 95 per cent.) is directed into the space between the thicknesses of plywood, thereby protecting the contents against the ravages of this high velocity of cold air as it circulates into the loaded refrigerator car.

International Bakery Exhibition

An international bakery and patisserie trade exhibition will be held from June 2 to 14 at Lugano, Canton of Tessin, Switzerland. Approximately 250 exhibitors from Argentina, Belgium, Britain, Canada, Denmark, France, Holland, Italy, Luxembourg, Sweden, Switzerland, and the United States are participating.

Irish Dietary Survey

One of the most significant facts revealed by the report on a dietary survey carried out in the Republic of Ireland in the years 1946 to 1948 is that consumption of milk was lowest in the unemployed groups; in the case of urban families and families of farm workers (as distinct from farmers), consumption of milk fell below a reasonable standard of adequacy.

The low consumption of cheese, which barely exceeded one ounce per person weekly, is also the subject of comment.

Co-operative Creamery Expands

An effort to enlarge the market for Irish cheese is being made by the Mitchelstown Creamery, County Cork, who are importing new packing and label-printing machinery to deal with the increasing sales in all markets.

This Co-operative creamery makes about 3,000 tons of cheese a year, and exports about one-third of it. The biggest customer is Britain, but some is already being sent to America.

In spite of the difficulty of obtaining supplies of cardboard and tinfoil for wrapping, the creamery has continued to expand since its formation in 1932.

As it was found that the whey, a by-product of cheese making, was harming the fish in the river into which it was dumped, it was decided to see how the whey and other waste products would feed pigs; the success of the experiment is shown by the fact that the pig farm now rears about 8,000 pigs a year.

Irish Jam Dearer

Having considered the applications from Irish jam manufacturers for increases in prices of jams and marmalades based on increases in the cost of production, the Prices Advisory Body in Ireland have recommended increases in most brands of ½d. per lb.

Pineapple, strawberry, and apple jams have gone up by 1d. per lb., but there is no change in prices of jams retailed at present at 1s. 1½d. per lb. or in blackcurrant jam, blackcurrant jelly, redcurrant jelly, and marrow and ginger jam.

Turkish Oils and Fats Factory

Backed by Lever Bros. and Unilever N.V. of Rotterdam and the IS Bank in Ankara, the Unilever-IS Turk Limited Sirketi Company has been set up in Turkey with a capital of five million Turkish pounds.

The new company will build a factory in European Turkey for the annual production of 4,000 tons of margarine and edible oils and fats, using mainly raw materials produced in that country such as sunflower seed and cottonseed.

The Turkish Government has promised to allow transfer of the new company's profits, in accordance with recent legislation to promote foreign investment in Turkey.

Danish Chocolate Factory

Scandinavia's most modern chocolate factory is to be erected in Broendbyvester on the outskirts of Copenhagen. Part of the factory, which is to be built by A/S Brdr. Cloetta of Copenhagen, is expected to be finished by the end of this year, and is likely to be in production by the beginning of 1952.

Preserved Food Fair at Parma

The British Consul-General at Milan has drawn attention to the possibilities of the sixth International Exhibition of Preserved Foods and Packing for United Kingdom manufacturers.

The exhibition will take place this year from September 12 to 23, at the Giardino Ducale, Parma, and will cover chemical products; food processing and preparation machinery; packaging equipment and supplies; handling, conveying, and other equipment for the canning industry; wrapping and labelling machines; fibre, transparent cellulose wrapping, and other types of containers; scientific apparatus used in the canning industry; raw materials for any section of the preserved food industry; and preserved food in general.

Temporary import licences will be granted by the Italian Government for machinery and other exhibits, and a quota will be fixed for goods sold at the exhibition. The Italian State Railways are granting a reduction of 30 per cent. for exhibitors at and visitors to the exhibition.

The closing date for applications for space is August 20.

The organisers are a self-governing body instituted by Decree sponsored by the Ministry of Commerce and Industry, the secretary-general being Dr. Ing. F. Emanuele, Viale Tanara, 33, Parma. The Italian Chamber of Commerce for Great Britain, however, act as the United Kingdom agents, and interested manufacturers are advised to communicate with them at 632, Grand Buildings, Trafalgar Square, London, W.C.2 (Telephone: Whitehall 5321).

Utilisation of Seaweed

The Norwegian Institute for Seaweed Research is now mapping the reserves of seaweed along the coast of Norway and also analysing the many varieties of seaweed. Two Norwegian firms are using thousands of tons of seaweed a year for making such products as animal fodder and various ingredients for puddings, ice cream, and other items. A considerable number of the finished products are exported.

Many fishermen are collecting seaweed to augment their income, and are paid at the rate of about 1½d. a lb. for dried seaweed.

News from the Ministries

Cereal Fillers

The maximum prices of cereal fillers were increased by £2 11s. 8d. a ton from April 8, 1951, as a result of the increase in the price of flour. The Cereal Fillers Order, 1951, has been amended accordingly.

Imports of Peas, Beans, and Tares

Until further notice, imports of maple peas, dun peas, tic beans, and tares for sowing or for other purposes will be permitted under individual licence from any countries except Albania, Argentina, Bolivia, Bulgaria, Canada, Colombia, Costa Rica, Cuba, Czechoslovakia, Dominican Republic, Ecuador, El Salvador, French Somaliland, Germany (Russian Zone), Guatemala, Haiti, Honduras, Hungary, Japan, Korea Liberia, Mexico, Nicaragua, Panama, Persia (Iran), Philippines, Poland, Roumania, Tangier, Union of Soviet Socialist Republics, United States of America, Venezuela, and Yugoslavia.

Applications for import licences should be made on form ILB/A (Revised), obtainable from the Board of Trade, Import Licensing Branch, Romney House, Tufton Street, London, S.W.1, or from Customs Offices.

For administrative convenience, applications in respect of any seeds required for sowing should be submitted to the Board of Trade through the Ministry of Agriculture and Fisheries, Seeds Branch B, Fertilisers and Seeds Division, 14/21, Chester Terrace, Regent's Park, London, N.W.1, accompanied by evidence of firm purchase, which may be "subject to import licence being granted."

Applications in respect of seeds required for any purpose other than sowing should be sent to the Board of Trade through the Ministry of Food, Animal Feedingstuffs Division, Portman Court, Portman Square, London, W.1, and also accompanied by evidence of firm purchase.

Producers' Prices for Milk

In accordance with the recent announcement by the Minister of Agriculture and Fisheries after the 1951 Farm Price Review, the prices paid to milk producers in England and Wales are being raised by an average of 1½d. a gallon for 1951/52, increases of the production bonus and producers' monthly prices having now been agreed with the National Farmers' Union and the Milk Marketing Board.

Somewhat similar increases are being given to producer-retailers and these will be taken into account in determining the rates of the Government grant.

It has also been announced that as a result of the special review, milk producers will be given the equivalent of an average increase of one-eighth of a penny a gallon for the year 1951/52 only. Since this award is related to wages already paid out by farmers, it has been agreed that payment to them should be made by the Milk Marketing Board during the early part of the year.

Import Licensing Alterations

On May 1, various additions and alterations were made to the list of goods that may be imported without individual licence from the usual "liberalisation" list of countries.

Items added to the list cover a very wide range of goods and include, among others, macaroni and similar products.

Details for amending the consolidated list (Appendix II of Notice to Importers No. 401) are given in Notice to Importers No. 437.

Bread Subsidy Changes

The following changes in the rates of bread subsidy result from the increase in the price of flour from April 1, and the increase in the price of bread from April 8:

1. From April 1, the rates operating in England and Wales, Scotland, and Northern Ireland were increased by 5s. 9d. per sack.
2. From April 8, the rate operating in England and Wales was reduced by 8s. 11d. per sack and the rates operating in Scotland and Northern Ireland were reduced by 9s. per sack. These reductions correspond to the estimated increases in proceeds arising from the increase in the price of bread having regard to the estimated average yields per sack of flour.

Biscuit Prices and Control

Orders replacing and consolidating, with amendments, the Biscuits (Licensing and Control) Order, 1943, as amended, and the Biscuits (Maximum Retail Prices) Order, 1943, as amended, respectively, have been made.

The principal changes effected by the new Orders, which came into force on April 15, 1951, are:

1. Petit fours and similar products are excluded from the definition of biscuits.
2. The scale of maximum retail prices of classified biscuits sold by weight is extended and the top price is now 4s. 6d. a pound instead of 3s. 6d.
3. The scale of maximum retail prices of classified biscuits sold by the package is also extended and the top price is now 6s. a package instead of 4s. 9d.
4. The Cake and Biscuit Alliance is empowered, without any further authority from the Minister, to classify biscuits for the purposes of price control; to amend, alter, or revoke classifications; to approve "approved marks" for manufacturers and "approved names" for classified products; and to fix "units of sale" for these products.

Sulphur and Sulphuric Acid

Detailed allocation schemes for the distribution to industry of sulphur and sulphuric acid were put into effect on May 1, 1951, to provide the most effective use of these commodities in the national interest. These schemes are based on a consumption of sulphur at the rate of approximately 100,000 tons per quarter.

In general this will mean that users will receive supplies varying between 80 and 90 per cent. of their total 1950 consumption. In the case of the superphosphate industry, however, the quantity of sulphuric acid allowed will remain at the present level of approximately two-thirds of capacity.

Key industries, such as iron and steel, tinplate, and certain oil refining processes, will be maintained at full output (including output from new capacity). Full production of essential food and health services will also be maintained.

When these allocation schemes are in full operation, no consumer should receive either less sulphur or sulphuric acid than he has had since the start of the year, and many will benefit by some increase in the rate of supplies. It is emphasised, however, that some short period will elapse before the schemes can be fully effective.

Prepacked Processed Cheese

The Cheese (Amendment) Order, 1951, which came into operation on May 1, 1951, alters the definition of "prepacked" and requires prepacked processed cheese to be packed in advance by the processor ready for retail sale:

(i) in a wrapper or container containing a net weight not exceeding 8 oz.; or
(ii) in a wrapper or container containing a number of portions each in a separate wrapper or container and each of a net weight not exceeding 8 oz.

The Board of Trade have also announced that processed cheese imported into the United Kingdom under open general licence shall now be defined as follows:

Cheese, processed (prepacked ready for retail sale in portions of a net weight not exceeding 8 oz. each and bearing on the wrapper or container of each portion a clear indication of the variety of the natural cheese), except cheese made from the following varieties: Cheddar, Cheshire, Derbyshire, Dunlop, Lancashire, Leicestershire, and White Wensleydale.

Importation of Raw Cherries

To prevent the introduction of the cherry fruit fly into England and Wales, the Minister of Agriculture and Fisheries has made the Importation of Raw Cherries Order, 1951, under the Destructive Insects and Pests Acts, 1877 to 1927, affecting the importation of cherries from European countries during the period May 19 to September 30, 1951.

Cherries grown in Spain, Portugal, France, Italy, Austria, Bulgaria, Hungary, Yugoslavia, Switzerland, Czechoslovakia, and Germany may be landed during the periods specified in the Order subject to certification as prescribed in the Schedule to the Order. Cherries from other European countries may now be landed, provided that they are accompanied by certificates of origin.

The provisions of the Order do not abrogate any regulations made by the Board of Trade and the Ministry of Food.

Marshmallow Jelly and Powder

In future licences will be required for the import, from any country, of marshmallow jelly and powder. Hitherto these have been importable without restriction from the usual "liberalisation" list of soft currency countries.

Paper and Paper Board Dearer

As from April 30, 1951, producers of paper are permitted to charge higher prices for home-produced newsprint, mechanical printings, and kraft liner board, to cover increased costs, due mainly to the higher price of imported wood pulp.

These increased costs have been notified by the paper makers, and after a careful review of existing prices, the Board of Trade have made an Order authorising increases of £13 16s. 3d. per ton for newsprint, £12 2s. 6d. to £22 2s. 6d. per ton for mechanical printings according to grade, and £43 5s. per ton for kraft liner board.

These changes are made under the Newsprint (Prices) (Amendment No. 4) and Paper (Prices) (No. 2) (Amendment No. 3) Orders (S.I. 1951, Nos. 683 and 684), copies of which may be obtained from H.M.S.O.

Committee on Thames Effluents

A Departmental Committee has been appointed by the Minister of Local Government and Planning with the following terms of reference:

"To consider the effects of heated and other effluents and discharges on the condition of the tidal reaches of the River Thames, both as at present and as regards any proposed new developments in the area, and to report."

Professor A. J. S. Pippard, M.B.E., D.Sc., M.I.C.E., head of the Department of Civil Engineering at the Imperial College of Science and Technology, is acting as chairman.

The secretary of the Committee is Mr. A. R. Isserlis, Ministry of Local Government and Planning, Whitehall, S.W.1, to whom all communications should be addressed.

Export Licensing Control Changes

Licences are now required for exports to all destinations of mixtures of specified abrasives, iron and steel in various forms, some types of used steel, manufactured cotton cleaning waste, and certain drugs and chemicals.

Licences are also required for the export to all countries except the Commonwealth, Irish Republic, and U.S.A., of some types of precision and electronic instruments, and of some types of mineral separation plant.

Labelling of Christmas Puddings

Under the Labelling of Food Order, 1950, all prepacked Christmas puddings sold after March 31, 1951, must bear labels on which the ingredients are disclosed. To allow further time for the disposal of stocks of Christmas puddings which do not comply with these labelling requirements, the Minister of Food has made the Labelling of Food (Amendment) Order, 1951, under which Christmas puddings will continue to be exempt from the labelling provisions of the main Order until a date to be appointed.

Toxic Chemicals in Agriculture

The recently published report of a Working Party under the chairmanship of Professor S. Zuckerman, C.B., F.R.S., which was appointed by the Minister of Agriculture and Fisheries to review the use of toxic chemicals in agriculture, deals with measures to promote the safety of workers handling the dinitro- and organophosphorus compounds which are being used increasingly in agriculture as weed-killers and insecticides. It makes a number of specific recommendations, some of which involve legislation.

In consultation with the interests concerned, action has already been taken to put in hand, by voluntary agreement, safety measures for the current spraying season on the lines recommended in the report.

Standards for and Sale of Cream

The Food Standards (Cream) Order, 1951, prescribing minimum standards of composition for cream made from cow's milk, came into force on April 30, 1951. The standards are as follows:

(*a*) For cream, a minimum of 18 per cent. milk fat; this standard applies to cream sold as such or under a description such as "single cream," "fruit cream," or "coffee cream."

(*b*) For double or thick cream and clotted cream, a minimum of 48 per cent. milk fat.

(*c*) For sterilised cream, a minimum of 23 per cent. milk fat; this standard is intended to relate to tinned sterilised cream, bottled sterilised cream, and the like.

The Order applies to all cream, whether home-produced or imported, including that sold by catering establishments.

In making the standards, the Minister of Food has had regard to the recommendations of the Food Standards Committee and to the representations which were received following the publication of the Committee's proposals in February. It is proposed to review the standards in the light of experience and also to consider whether any special labelling provisions are called for.

As previously announced, the Food Standards Committee propose to deal with artificial cream and synthetic cream in a later report.

The sale of cream and the serving of cream by catering establishments will be allowed generally during the period when supplies of milk are most plentiful. The Minister has accordingly made the Cream (Revocation) Order, 1951, which removes all the restrictions imposed by the Cream Order, 1950, as from May 9.

No licence is now needed to produce or sell cream, but anyone who wishes to do so and who is not already registered under the Milk and Dairies Regulations, 1949, should consult his local authority. Cream will not be subject to price control.

Because of the shortage of tinplate, the packing of sterilised cream in hermetically sealed metal containers will not be permitted.

Limited quantities of cream will be imported on Government account by the Ministry of Food.

Butter Prices

An Order to give effect to the increased price of butter announced on April 26 has been made. The new prices at two stages of distribution are as follows:

	Price per cwt. s.	d.
Butter packed in rolls, bricks, or packets weighing not more than 1 lb. each.		
On a first-hand sale ...	249	3
On a sale by wholesale ...	237	0
Butter other than that described above.		
On any sale other than a sale by retail	250	0

There will be no change in the price of unsubsidised butter sold to a manufacturer.

Food College Head Appointed

The governors of the National College of Food Technology have appointed as principal of the College Dr. J. D. Mounfield, at present head of the research department of The British Arkady Company, Manchester.

Dr. Mounfield, who will take up his new post this month, graduated as Bachelor of Technical Science, University of Manchester, in 1921, and was awarded the degree of Master of Technical Science in 1923, and degree of Ph.D. in 1936.

He lectured for some time on foodstuffs in the Faculty of Technology, Manchester University, and thereafter was employed by the British Flour-Millers' Research Association. During the last war he carried out investigations for the Ministry of Food at the Cereal Research Station into the drying and storage of grain.

He is the author of various scientific publications on grain and flour, and holds a number of patents.

Prices of Dried Fruits

The Dried Fruits (Amendment) Order, 1951, which increased from May 6 the maximum wholesale and retail prices of some dried fruits, has been made. These increases are necessary because of higher purchasing costs.

The fruits concerned are: raisins (stoned and unstoned); sultanas; and dried apples, apricots, nectarines, peaches, and pears.

Application for Import Licence

A revised form of application for import licence, ILB/A (revised), for goods other than vehicles, machinery, plant, scientific instruments, and parts, was introduced by the Import Licensing Branch of the Board of Trade on April 23. The form provides that the applicant, in effect, completes his own form of import licence with two copies and, in approved cases, this will be validated as an import licence by the Board of Trade. The date of the issue of the licence will be indicated by a perforated device.

Although applications for licences on the old form of application will continue to be accepted by the Board of Trade, it is hoped that importers will use the new form as soon as possible. Copies may be obtained from the Board of Trade, Import Licensing Branch, Romney House, Tufton Street, London, S.W.1 (Telephone: Abbey 9080), or from all regional offices of the Board of Trade.

Sugar for Rearing Queen Bees

Beekeepers may now obtain supplies of sugar, not exceeding 3 lb. a mating nucleus, for rearing queen bees. Application for permits must be made on the official form, which may be obtained from local Food Offices. After the applicant has completed the form, it should be countersigned by a responsible person, if possible the secretary of a County or District Beekeepers' Association or some other person with a knowledge of the technique of beekeeping, and returned by the applicant to his local Food Office not later than July 14, 1951.

The allowance will be granted only for nuclei from each of which a number of queens will be mated during the season to enable beekeepers to re-queen their own existing colonies or to supply queens to other beekeepers for re-queening existing colonies. No allowance will be made for the purpose of increasing the number of colonies or for nuclei from which it is intended to mate only one queen. Beekeepers who require only a small number of queens for re-queening should arrange, where practicable, to obtain queens from other beekeepers who are rearing large numbers.

Information and Advice

This Service is available for subscribers to FOOD MANUFACTURE. Postal replies will be sent if a stamped, addressed envelope is enclosed with enquiries.

Liquorice Production

B.5016. *We should be glad if you would let us have a recipe for liquorice made from unrationed materials.* (London.)

The following recipe is given as a basis for trial, and it must be stressed that a test batch should first be made and further tested for shelf-life over a reasonable period before attempts are made to produce on a large scale. No substitute can be used to replace the sugar without danger of hygroscopic deterioration.

	lb.
Wheat flour	28
Grape juice	21
Gelatine	10
Liquorice juice	5
Caramel (burnt sugar)	14

The gelatine is soaked until pliable. The grape juice is dissolved in a steam pan in 2 gal. of water; the broken liquorice juice is added and dissolved. This solution is strained to eliminate lumps; it is then placed in a steel stirring cooker, and the soaked gelatine dissolved in the batch. The cooking is commenced, and the flour is added slowly to allow gradual gelatinisation of the flour without lumpiness occurring. Cooking is continued until a medium ball texture is obtained in a cooled test piece. The cooked batch is passed through the liquorice refiner to eliminate lumps, and is then transferred to the extruding machine.

The extruded sheets or rods are placed on iron trays in a well-ventilated drying room with constantly moving air, and allowed to dry until the material has lost its tender state and has attained a firm but not brittle texture.

Waffle Manufacture

B.5079. *We should be grateful if you could let us have a recipe for the manufacture of waffles.* (Yorks.)

The following recipe is recommended as a basis for experiment:

Sugar	2½ lb.
Eggs	1 pint
Vanilla essence	*q.s.*
Cake flour	2 lb.
Butter	10 oz.

The sugar, eggs, and vanilla essence are whisked up to a sponge. The flour is sieved and mixed in lightly, after which the melted butter is added. The batter should be thinned down to the required consistency with about 1 quart of well-whipped cream, or with some milk, and then cooked in waffle irons.

Boiled Sugar Goods

B.5085. *We shall be glad to have some information on the production of lollipops and rocks, utilising unallocated materials such as fondant.* (London.)

Boiled sugar goods may be made quite readily from fondant and apple glucose. The total glucose content of the batch should be made up to 25 to 28 per cent. Fondants are offered with varying compositions and it is an easy matter to calculate the amount of apple glucose to be added to attain the necessary stability.

The fondant and glucose are placed in the pan with a small amount of water, and boiled to dissolve the fondant completely; cooking proceeds to 285° to 290° F., and the batch is manipulated in the usual way.

It must be stressed that it is necessary to make a few trial batches and shelf-life tests before embarking on full scale production.

Bread for Diabetics

B.5109. *Would you let us have a recipe for bread suitable for people suffering from diabetes.* (Ceylon.)

The following recipe for diabetic bread, which has about 34 per cent. less starch than National bread in the U.K., is given as a basis for trial:

	lb.	*oz.*
Flour	3	8
Yeast		½
Salt		1
Water	1	14

A cold dough is made up from these ingredients and left overnight to mature. The starch is washed out to produce about 1 lb. mature wet gluten.

	lb.	*oz.*
Hovis or germ meal	7	4
Mature wet gluten	1	
Butter		4

The butter is rubbed into the flour and the mature wet gluten is "torn" in.

	lb.	*oz.*
Yeast		3
Water	3	12

The yeast and water are mixed and used to make a clear dough with the other ingredients. This dough should be set at 70° F. and allowed to ferment for one hour.

The total weight is 12 lb. 4 oz., and this can be used to produce twelve loaves scaled at 1 lb. each, and moulded into 1 lb. bread tins.

These are proved and baked as usual.

Information Supplied

The Enquiry Service has dealt with requests for the names of manufacturers and suppliers of plant, machinery, and materials, and also general information as follows:

B.5061. *New Danish egg preserving method; small smoking stoves; smokeless smoking kiln; and machines for making ice cream cones.* (Hants.)

B.5063. *Dog biscuits and dog meal.* (London.)

B.5065. *Sulphur dioxide content of fruit juices.* (Lancs.)

B.5066. *Cheese essence.* (Sussex.)

B.5067. *Marmalade manufacture.* (Moray.)

B.5070. *Anchovy paste.* (Spain.)

B.5072. *Sauce spices.* (Lanarks.)

B.5074. *Transparent cans.* (Canada.)

B.5077. *Automatic packing machines for meat.* (London.)

B.5080. *Smoking and curing of meat.* (Glam.)

B.5081. *Cheese and potato straws; and clarification of frying oils.* (Yorks.)

B.5082. *Electric pepper grinding mills.* (Chile.)

B.5083. *Noodles for soups.* (Lincs.)

B.5084. *Label perforators.* (Midlothian.)

B.5094. *Road tankers.* (Belgium.)

B.5095. *Ice cream wafers.* (Guernsey.)

B.5096. *Chocolate and confectionery.* (Ireland.)

B.5097. *Lactic acid.* (Cumberland.)

Recent Patents

649,125. BARON, T.: Sealing of lidded boxes or containers.
649,138. HEIJDEN, P. VAN DER: Shears for making cuts in dough for bread baked in tins.
649,170. ROBINSON, LTD., E. S. AND A., ROBINSON, P. N., and WEAVER, J. F.: Cartons.
649,204. LAVAL SEPARATOR CO.: Malt extract process.
649,205. WEISS, J.: Labelling machines.
649,298. RUSSELL CONSTRUCTIONS, LTD., and HURST, J.: Sifting and straining apparatus.
649,339. RESEARCH CORPORATION: Esters of vitamin A.
649,355. MCTAGGART, J. G., and ROSS, D. T.: Machine for sealing cartons.
649,380. BAKER PERKINS, LTD., and MACFARLANE, R. F.: Machines for applying icing to biscuits and the like.
649,386. BANKS, A., and EDDIE, G. C.: Packing of kippers.
649,420. VASSE, R. W.: Foldable crates for the transport of fruits, vegetables, and other articles.
649,424. PURITY BAKERIES SERVICE CORPORATION: Device and method for extracting bread and the like from baking pans.
649,456. STERNE AND CO., LTD., L., and CARRUTHERS, D. S.: Cooling apparatus for ice cream mixes.
649,541. HOBSON, C. W.: Packages and containers.
649,769. MULLINIX, C. D.: Packaging means and methods of making packaging material.
649,790. ROSE BROS. (GAINSBOROUGH), LTD., and ROSE, A. G.: Wrapping or other packaging machines.
650,480. STEEL AND CO. (PRESSINGS), LTD., HILTON, W., WOOD, M. E., and DALE, G. H.: Gas burners for fish frying.
650,504. LEVER BROS. AND UNILEVER, LTD., and TROTTER, R. L.: Method and machine for securing caps to glass jars.
650,653. RICHARDS, P. G., and ROPER, D. R.: Machines for topping and tailing onions, shallots, and other vegetables.
650,678. AASTED, K. C. S.: Apparatus for casting chocolate.
650,698. BRAINOS, M. (trading as BRAINOS AND CO.): Manufacture of skins or cases for sausages or other foodstuffs.

Abstract of a Recent Specification

Preservation of Fruit

In factories engaged in the manufacture of chocolates, confectionery, and sweets, the various kinds of fruit suitable for the preparation of crystallised fruit and the like have hitherto not been made full use of. For the manufacture of crystallised fruit only a limited range of fruits have been used, while the other kinds of fruit were worked up into jams, perhaps because their flesh was too soft and was therefore not so suitable for sugar permeation by the uneconomical methods hitherto in use. Such methods were too costly, so that they could not be used on a large scale for sugar permeation.

The present invention relates to a new process and apparatus for the sugar permeation of all kinds of soft and hard fruits, and also the flesh of melons and marrows, orange peel, and so forth, which may be widely used in the manufacture of crystallised fruit.

The sugar permeating process is carried out in a diffusion system consisting of a battery of vessels, the individual vessels of which are disposed in series in a circuit in such a manner that fruit with which the saturated sugar solution comes first into contact, quickly becomes strongly permeated with sugar, so that the permeation is soon completed in the leading vessel, while a more gradual permeation takes place in the further vessels. The leading vessel of the battery is therefore put out of operation, and the permeation is next completed in the second vessel and so on.

In this way the fruit comes continuously into contact with the sugar solution, the degree of permeation with sugar can be controlled in each stage of the process, and the process can be interrupted at any stage, the fruit, after blanching, being transferred directly into jars. When the fruit has been sufficiently permeated with sugar it is transferred to jars provided with secure closures and subsequently subjected to sterilisation in a container.

642,688. *Frantisek Palik.*

Recent patents have been selected from the "Official Journal of Patents" and are published by permission of the Controller of H.M.S.O.

Trade Marks

CHISCUITS.—689,849. Articles of food made of cooked potato flour with a cheese flavouring. **Sonja Brook** and **Harry Fielder,** trading as **Brookfields,** 24, Notting Hill Gate, London, W.11; Manufacturers.

GOLDEN MARIE.—690,216. Canned fruits. **John Martin of London, Limited,** 14, Seething Lane, London, E.C.3; Merchants.

MARCHON.—691,072. Edible oils and edible fats; emulsions of edible oils and edible fats; and compositions of emulsified fatty acid esters for use as ingredients in food. **Marchon Products, Limited,** "Rylestone," Holders Hill Crescent, Hendon, London, N.W.4; Chemical Manufacturers.

SANOVITE.—691,613. Biscuits (other than biscuits for animals). **Liga Fabrieken N.V.** (a Limited Liability Company organised under the laws of the Netherlands), z.o. Singel 43, Bergen op Zoom, Holland; Manufacturers and Merchants.

STRONGHOLD.—692,548. Tea. **Brash Brothers (Tea), Limited,** 13, Rood Lane, London, E.C.3; Merchants.

TRISTRAN. — 692,721. Canned fish, canned fruit, canned meat, and canned vegetables. **Thomas J. Smith, Limited,** 11/12, Fenchurch Street, London, E.C.3; Merchants.

YEP.—693,410. Eggs. **Yorkshire Egg Producers, Limited,** The Packing Station, Whitehall Road, Drighlington, near Bradford, County of York; Packers and Merchants.

SEBA.—693,489. Bread and flour confectionery. **South Eastern Bakeries, Limited,** Wigmores North, Welwyn Garden City, Hertfordshire; Bakers and Confectioners.

CHOCORELLI.—693,609. Chocolate in filamentary form. **Nectar, Limited,** 1-2, Purley Place, Islington Park Street, London, N.1; Manufacturers.

Trade marks have been selected from the "Official Trade Marks Journal" and are published by permission of the Controller of H.M.S.O.

New Companies

W. F. Thurgood, Limited. (491453.) St. Johns Cross, Great Chesterford, Essex. To carry on business of fruiterers and greengrocers, bacon factors, etc. Nom. cap.: £5,000 in £1 shares. Dirs.: W. F. Thurgood, St. Johns Cross, Great Chesterford, Essex; R. Freeman, High Street, Great Chesterford, Essex; C. A. Andrews; Miss E. N. Dyer; and Mrs. M. W. Webb.

Wm. Jackson and Sons (Leeds), Limited. (491675.) 179, Water Lane, Leeds, 11. To take over business of Wm. Jackson and Sons, carried on at Hartington Road, Tong Road, Leeds, and to carry on business of bakers, manufacturers of, and dealers in farinaceous compounds and materials, etc. Nom. cap.: £100 in £1 shares. Dirs.: Phyllis Timbrell, Ashfield Cottage, Thorner, near Leeds; P. L. Scarr, Wharfedale Hall, Boston Spa, Yorks.

Modern Nutrients, Limited. (491701.) 38, The Little Boltons, S.W.10.. To carry on business of buying, selling, manufacturing, and dealing in all substances and things capable of being used for the purpose of complete nourishment of the body and to promote knowledge and understanding in nutrition generally. Nom. cap.: £100 in £1 shares. Dirs.: A. George Hall, Ph.D., LL.D., 10, South Bolton Gardens, S.W.5; C. Reid, A.M.I.Mech.E., Old Mill, Down St. Mary, Crediton, Devon; J. Sanderson, B.Sc.; and H. B. Parry.

C. Brown (Birmingham), Limited. (491755.) 104, Cherrywood Road, Bordesley Green, Birmingham, 9. To carry on business of grocers, provision merchants, etc. Nom. cap.: £6,000 in £1 shares (3,000 cum. pref.). Dirs.: C. Brown (permt.) and Mrs. G. J. Brown, 73, Marlborough Road, Castle Bromwich, Warwicks.; H. P. M. Burns, 83, Ralph Road, Shirley, Warwicks.

Peak Ices, Limited. (491762.) 1, Oak Street, Hazel Grove, Cheshire. Nom. cap.: £15,000 in £1 shares. Permt. dirs.: S. R. Spearing and Mrs. E. Spearing, Park Cottage, Manchester Road, Macclesfield.

Albion Packaging Company, Limited. (491776.) 68, Upper Richmond Road, Putney, S.W.15. To carry on business of preservers, prepackers, carton and case makers, etc. Nom. cap.: £1,000 in £1 shares. Permt. dirs.: T. R. P. Miles, 52, Mexfield Road, S.W.15; R. R. Lockie, 45, Werter Road, S.W.15; A. C. Channer, 13, Timbercroft, Ewell, Surrey.

Jaconelli (Scarborough), Limited. (491792.) 36/8, Newborough, Scarborough. To carry on business of manufacturers of and dealers in ice cream, cream, milk, milk powder, etc. Nom. cap.: £5,000 in £1 shares. Permt. dirs.: R. Jaconelli (mang. dir.) and Mrs. A. Jaconelli, 36/8, Newborough, Scarborough.

Marlbeck Food Products, Limited, (491798.) Grand Buildings, Trafalgar Square, W.C.2. Nom. cap.: £500 in £1 shares. Dir.: M. Chernanko, 131, Farmilo Road, Leyton, E.17.

Midland Confectionery (Sandiacre), Limited. (491799.) To carry on business of bakers and confectioners, dairymen. etc. Nom. cap.: £3,000 in £1 shares. Dirs.: M. Hyams, 15, Stockbrook Road, Derby; J. T. Slater, 140, Radbourne Street, Derby; W. Radford; and H. W. C. Hall.

Taken from the Daily Register, compiled by Jordan and Sons, Limited, Company Registration Agents, 116, Chancery Lane, London, W.C.2.